

=> fil reg

FILE 'REGISTRY' ENTERED AT 09:11:51 ON 26 OCT 2006

=> d his

FILE 'HCAPLUS' ENTERED AT 07:57:26 ON 26 OCT 2006

L1 1 S US20040063650/PN  
SEL RN

FILE 'REGISTRY' ENTERED AT 07:57:41 ON 26 OCT 2006

L2 5 S E1-E5  
E ACROLEIN/CN  
L3 1 S E3  
L4 1 S 74-93-1/RN  
L5 1 S 107-02-8/RN  
L6 1 S 64-19-7/RN

FILE 'CASREACT' ENTERED AT 08:07:41 ON 26 OCT 2006

SET NOTICE DISPLAY 1  
SET NOTICE LOGIN DISPLAY  
L7 1 S 140:287102/AN  
L8 STR  
L9 1 S L8  
L10 12 S L8 FUL

FILE 'HCAPLUS' ENTERED AT 08:38:48 ON 26 OCT 2006

L11 7412 S L4  
L12 12927 S L5  
L13 100180 S L6  
L14 1076 S (L11 OR L12) AND L13  
L15 295 S L14 AND RACT/RL  
L16 47 S L15 AND ALIPHAT?/SC  
L17 31 S L16 AND CAT/RL  
L18 2 S L17 AND THIO?

FILE 'REGISTRY' ENTERED AT 08:45:07 ON 26 OCT 2006

L19 1 S 3268-49-3/RN

FILE 'HCAPLUS' ENTERED AT 08:45:30 ON 26 OCT 2006

L20 1199 S L19  
L21 56 S L14 AND L20  
L22 8 S L21 AND PREP/RL  
L23 8 S L15 AND L20  
L24 10 S L22 OR L23  
L25 79 S L20(L) PREP/RL  
L26 37 S L25 AND L11  
L27 33 S L26 AND ALIPHAT?/SC, SX  
L28 39 S L24 OR L27  
L29 35 S L28 AND (1840-2002)/PRY, AY, PY  
L30 1 S L29 AND L1

=> d que 129

L4 1 SEA FILE=REGISTRY ABB=ON 74-93-1/RN  
L5 1 SEA FILE=REGISTRY ABB=ON 107-02-8/RN  
L6 1 SEA FILE=REGISTRY ABB=ON 64-19-7/RN  
L11 7412 SEA FILE=HCAPLUS ABB=ON L4  
L12 12927 SEA FILE=HCAPLUS ABB=ON L5  
L13 100180 SEA FILE=HCAPLUS ABB=ON L6

L14 1076 SEA FILE=HCAPLUS ABB=ON (L11 OR L12) AND L13  
 L15 295 SEA FILE=HCAPLUS ABB=ON L14 AND RACT/RL  
 L19 1 SEA FILE=REGISTRY ABB=ON 3268-49-3/RN  
 L20 1199 SEA FILE=HCAPLUS ABB=ON L19  
 L21 56 SEA FILE=HCAPLUS ABB=ON L14 AND L20  
 L22 8 SEA FILE=HCAPLUS ABB=ON L21 AND PREP/RL  
 L23 8 SEA FILE=HCAPLUS ABB=ON L15 AND L20  
 L24 10 SEA FILE=HCAPLUS ABB=ON L22 OR L23  
 L25 79 SEA FILE=HCAPLUS ABB=ON L20(L)PREP/RL  
 L26 37 SEA FILE=HCAPLUS ABB=ON L25 AND L11  
 L27 33 SEA FILE=HCAPLUS ABB=ON L26 AND ALIPHAT?/SC, SX  
 L28 39 SEA FILE=HCAPLUS ABB=ON L24 OR L27  
 L29 35 SEA FILE=HCAPLUS ABB=ON L28 AND (1840-2002)/PRY, AY, PY

=> fil hcap  
 FILE 'HCAPLUS' ENTERED AT 09:12:05 ON 26 OCT 2006

=> d 129 1-35 ibib abs hitstr hitind

L29 ANSWER 1 OF 35 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:348011 HCAPLUS Full-text  
 DOCUMENT NUMBER: 140:356948  
 TITLE: Catalytic addition reaction for the production  
       of 3-(methylthio)propanal from mercaptomethane  
       and acrolein  
 INVENTOR(S): Rey, Patrick  
 PATENT ASSIGNEE(S): Adisseo France S.A.S., Fr.  
 SOURCE: Eur. Pat. Appl., 10 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

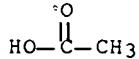
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1413573	A1	20040428	EP 2002-356211	2002 1024
<--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
CA 2495746	AA	20040506	CA 2003-2495746	2003 1014
<--				
WO 2004037774	A1	20040506	WO 2003-IB4557	2003 1014
<--				

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,  
 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES,  
 FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
 KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG,  
 MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO,

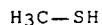
RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ,  
 UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM,  
 AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,  
 DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL,  
 PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN,  
 GQ, GW, ML, MR, NE, SN, TD, TG  
 AU 2003267771      A1      20040513      AU 2003-267771  
2003  
1014  
 EP 1556343      A1      20050727      EP 2003-748466  
2003  
1014  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
 MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,  
 EE, HU, SK  
 BR 2003015385      A      20050823      BR 2003-15385  
2003  
1014  
 CN 1705641      A      20051207      CN 2003-80101589  
2003  
1014  
 JP 2006515834      T2      20060608      JP 2004-546263  
2003  
1014  
 US 2005240048      A1      20051027      US 2005-524548  
2005  
0516  
 NO 2005002471      A      20050725      NO 2005-2471  
2005  
0523  
 PRIORITY APPLN. INFO.:      EP 2002-356211      A  
2002  
1024  
 WO 2003-IB4557      W  
2003  
1014

OTHER SOURCE(S):      CASREACT 140:356948

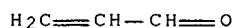
AB      A process for the production of 3-(methylthio)propanal comprises reacting mercaptomethane and acrolein in the presence of a catalyst comprising an organic base such as an N-alkylmorpholine (e.g., 4-methylmorpholine).  
 IT      64-19-7, Acetic acid, uses  
           (addition reaction catalysts in the production of 3-(methylthio)propanal from mercaptomethane and acrolein)  
 RN      64-19-7 HCAPLUS  
 CN      Acetic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IT 74-93-1, Mercaptomethane, reactions 107-02-8,  
Acrolein, reactions  
(catalytic addition reaction for the production of  
3-(methylthio)propanal from mercaptomethane and acrolein)  
RN 74-93-1 HCAPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



RN 107-02-8 HCAPLUS  
CN 2-Propenal (9CI) (CA INDEX NAME)



IT 3268-49-3P, 3-(Methylthio)propanal  
(catalytic addition reaction for the production of  
3-(methylthio)propanal from mercaptomethane and acrolein)  
RN 3268-49-3 HCAPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IC ICM C07C319-18  
ICS C07C323-22  
CC 23-14 (**Aliphatic** Compounds)  
Section cross-reference(s): 45, 67  
IT 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses  
79-09-4, Propanoic acid, uses 100-74-3, 4-Ethylmorpholine  
107-92-6, Butyric acid, uses 109-02-4, 1-Methylmorpholine  
(addition reaction catalysts in the production of 3-  
(methylthio)propanal from mercaptomethane and acrolein)  
IT 74-93-1, Mercaptomethane, reactions 107-02-8,  
Acrolein, reactions  
(catalytic addition reaction for the production of  
3-(methylthio)propanal from mercaptomethane and acrolein)  
IT 3268-49-3P, 3-(Methylthio)propanal  
(catalytic addition reaction for the production of  
3-(methylthio)propanal from mercaptomethane and acrolein)  
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

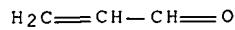
TITLE: Method for producing 3-methylthiopropanal from acrolein and methyl mercaptan  
 INVENTOR(S): Shiozaki, Tetsuya; Haga, Toru  
 PATENT ASSIGNEE(S): Sumitomo Chemical Company, Limited, Japan  
 SOURCE: U.S. Pat. Appl. Publ., 4 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004063650	A1	20040401	US 2003-665006	2003 0922
JP 2004115461	A2	20040415	JP 2002-282874	2002 0927
EP 1408029	A1	20040414	EP 2003-21191	2003 0924
<--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
CN 1496979	A	20040519	CN 2003-125534	2003 0925
<--				
PRIORITY APPLN. INFO.:			JP 2002-282874	A 2002 0927
<--				

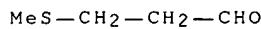
OTHER SOURCE(S): CASREACT 140:287102  
 AB 3-Methylthiopropanal is produced in high yield and selectivity by supplying acrolein and Me mercaptan together or sequentially with an acidic compound (e.g., acetic acid) and a basic compound (e.g., pyridine) into a reaction system to react the acrolein with the Me mercaptan, where the basic compound is used in an amount of about 0.3 mol or less per mol of the acidic compound  
 IT 74-93-1, Methyl mercaptan, reactions 107-02-8,  
 Acrolein, reactions  
 (method for producing 3-methylthiopropanal from acrolein and Me mercaptan)  
 RN 74-93-1 HCPLUS  
 CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C-SH

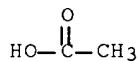
RN 107-02-8 HCPLUS  
 CN 2-Propenal (9CI) (CA INDEX NAME)



IT **3268-49-3P**, 3-Methylthiopropanal  
(method for producing 3-methylthiopropanal from acrolein and Me mercaptan)  
RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IT **64-19-7**, Acetic acid, uses  
(method for producing 3-methylthiopropanal from acrolein and Me mercaptan using)  
RN 64-19-7 HCPLUS  
CN Acetic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C07C323-22  
INCL 514041000  
CC 23-14 (**Aliphatic** Compounds)  
Section cross-reference(s): 45  
IT **74-93-1**, Methyl mercaptan, reactions **107-02-8**,  
Acrolein, reactions  
(method for producing 3-methylthiopropanal from acrolein and Me mercaptan)  
IT **3268-49-3P**, 3-Methylthiopropanal  
(method for producing 3-methylthiopropanal from acrolein and Me mercaptan)  
IT **64-19-7**, Acetic acid, uses 110-86-1, Pyridine, uses  
(method for producing 3-methylthiopropanal from acrolein and Me mercaptan using)

L29 ANSWER 3 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2003:639035 HCPLUS Full-text  
DOCUMENT NUMBER: 139:166201  
TITLE: Process for purification of acrolein  
INVENTOR(S): Gros, Georges; Garrait, Michel; Rey, Patrick  
PATENT ASSIGNEE(S): Aventis Animal Nutrition S.A., Fr.  
SOURCE: Fr. Demande, 20 pp.  
CODEN: FRXXBL  
DOCUMENT TYPE: Patent  
LANGUAGE: French  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
------------	------	------	-----------------	------

-----

FR 2835831 A1 20030815 FR 2002-1686  
2002  
0212  
<--

FR 2835831 B1 20060901  
CA 2474416 AA 20030821 CA 2003-2474416  
2003  
0212  
<--

WO 2003068721 A1 20030821 WO 2003-FR454  
2003  
0212  
<--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG,  
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD,  
SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM,  
AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,  
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL,  
PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG

AU 2003226883 A1 20030904 AU 2003-226883  
2003  
0212  
<--

EP 1474374 A1 20041110 EP 2003-739531  
2003  
0212  
<--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,  
EE, HU, SK

BR 2003007450 A 20041228 BR 2003-7450  
2003  
0212  
<--

US 2005103616 A1 20050519 US 2003-500715  
2003  
0212  
<--

CN 1630627 A 20050622 CN 2003-803721  
2003  
0212  
<--

JP 2005521684 T2 20050721 JP 2003-567856  
2003  
0212  
<--

ZA 2004005340 A 20050630 ZA 2004-5340  
2004  
0705  
<--

NO 2004003715 A 20040906 NO 2004-3715  
2004

0906

PRIORITY APPLN. INFO.:

<--  
FR 2002-1686

A

2002  
0212

<--  
WO 2003-FR454

W

2003  
0212

AB The present invention thus has as an aim a continuous process of purification of the acrolein in which: (1) an aqueous acrolein solution deprived of noncondensable gas is fed into a distillation column; (2) an aqueous mixture is drawn off from the bottom; (3) a mixture based on acrolein and water is drawn off from the head; (4) the head fraction is cooled to sep. the water from an acrolein-rich gas, and (5) acrolein is isolated from the gas from (4). The resulting acrolein is suitable for manufacture of 3-methylthiopropionaldehyde by reaction with Me mercaptan.

IT **3268-49-3P**, 3-Methylthiopropionaldehyde  
(purification of acrolein by distillation of aqueous compns. for manufacture of methylthiopropionaldehyde by reaction with Me mercaptan)

RN 3268-49-3 HCPLUS

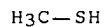
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME).



IT **74-93-1**, Methyl mercaptan, reactions  
(purification of acrolein by distillation of aqueous compns. for manufacture of methylthiopropionaldehyde by reaction with Me mercaptan)

RN 74-93-1 HCPLUS

CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



IC ICM C07C045-82

ICS C07C047-22; C07C319-28; C07C321-18; A23K001-22

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

Section cross-reference(s): 23

IT **3268-49-3P**, 3-Methylthiopropionaldehyde

(purification of acrolein by distillation of aqueous compns. for manufacture of methylthiopropionaldehyde by reaction with Me mercaptan)

IT **74-93-1**, Methyl mercaptan, reactions

(purification of acrolein by distillation of aqueous compns. for manufacture of methylthiopropionaldehyde by reaction with Me mercaptan)

REFERENCE COUNT:

7

THERE ARE 7 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L29 ANSWER 4 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2001:112320 HCPLUS Full-text  
DOCUMENT NUMBER: 134:164826  
TITLE: Manufacture of acrolein and acrolein derivatives from Diels-Alder reaction or Michael addition  
INVENTOR(S): Etzkorn, William George; Galley, Richard A.; Snead, Thomas E.; Brockwell, Jonathan Lester; Young, Mark Anderson; Maher, John Michael; Warren, Barbara Knight  
PATENT ASSIGNEE(S): Union Carbide Chemicals and Plastics Technology Corporation, USA  
SOURCE: U.S., 11 pp., Cont.-in-part of WO9736848.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 3  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6187963	B1	20010213	US 1998-169798	1998 1009
WO 9736848	A1	19971009	WO 1997-US5100	1997 0327
W: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG			<--	
RW: AU, BB, BG, BR, CA, CN, CZ, HU, IS, JP, KP, KR, LK, LR, LV, MK, MX, NO, NZ, PL, SG, SI, TR, TT, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
EP 891316	A1	19990120	EP 1997-917687	1997 0327
EP 891316	B1	20030521		<--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI				
PRIORITY APPLN. INFO.:			EP 1997-917687	A
				1997 0327
			WO 1997-US5100	A2
				1997 0327
			US 1996-14507P	P
				1996 0401
			US 1996-14510P	P
				1996 0401
			US 1996-14678P	P

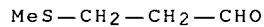
<--

AB A process for producing an acrolein derivative comprises (i) passing a propylene feed stream comprising propylene, oxygen, and a recycle gas comprising propane, oxygen, and at least one of carbon monoxide and carbon dioxide to an acrolein reaction zone wherein the propylene feed stream is contacted with an acrolein reaction catalyst at conditions effective to promote the formation of acrolein to provide an acrolein effluent stream comprising acrolein, propane, acetaldehyde and water; (ii) passing the acrolein effluent stream to an acrolein separation zone wherein the acrolein effluent stream is partially condensed to provide a liquid acrolein product stream comprising acrolein, acetaldehyde, and water and a recycle gas stream comprising the recycle gas; (iii) passing the acrolein product stream and a co-reactant capable of undergoing a Diels-Alder reaction or Michael addition with acrolein to an acrolein derivative reaction zone and contacting the acrolein and co-reactant under conditions effective to convert the acrolein and the co-reactant into an acrolein derivative; and (iv) recycling at least a portion of the recycle gas stream to the acrolein reaction zone. The process is characterized in that the propylene feed stream comprises an amount of propane of from about 5 to 70 volume% and effective to provide a propylene-to-acrolein reaction efficiency of from about 75 to 90 mol%.

IT 3268-49-3P, 3-(Methylthio)propanal  
(manufacture of acrolein and acrolein derivs. from Diels-Alder reaction or Michael addition)

RN 3268-49-3 HCPLUS

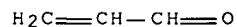
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IT 107-02-8P, Acrolein, preparation  
(manufacture of acrolein and acrolein derivs. from Diels-Alder reaction or Michael addition)

RN 107-02-8 HCPLUS

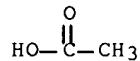
CN 2-Propenal (9CI) (CA INDEX NAME)



IT 64-19-7, Acetic acid, reactions 74-93-1, Methyl mercaptan, reactions  
(manufacture of acrolein and acrolein derivs. from Diels-Alder reaction or Michael addition)

RN 64-19-7 HCPLUS

CN Acetic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C-SH

IC C07C027-10; C07C045-27; C07C045-32  
INCL 568469900  
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 23  
IT 100-73-2P, 2-Formyl-3,4-dihydro-2H-pyran 108-99-6P,  
β-Picoline 110-86-1P, Pyridine, preparation 111-30-8P,  
Glutaraldehyde 504-63-2P, 1,3-Propanediol 1321-16-0P,  
Tetrahydrobenzaldehyde 3268-49-3P, 3-  
(Methylthio)propanal 31906-04-4P, 4-(4-Hydroxy-4-methylpentyl)-3-  
cyclohexene-1-carboxaldehyde 75454-86-3P 84315-07-1P  
(manufacture of acrolein and acrolein derivs. from Diels-Alder  
reaction or Michael addition)  
IT 107-02-8P, Acrolein, preparation 2134-29-4P,  
3-Hydroxypropionaldehyde 4454-05-1P, 2-Methoxy-3,4-dihydro-2H-  
pyran  
(manufacture of acrolein and acrolein derivs. from Diels-Alder  
reaction or Michael addition)  
IT 56-81-5, 1,2,3-Propanetriol, reactions 57-55-6, Propylene  
glycol, reactions 64-17-5, Ethanol, reactions 64-19-7,  
Acetic acid, reactions 65-85-0, Benzoic acid, reactions  
67-56-1, Methanol, reactions 67-63-0, Isopropanol, reactions  
74-93-1, Methyl mercaptan, reactions 79-09-4, Propionic  
acid, reactions 106-99-0, Butadiene, reactions 107-18-6, Allyl  
alcohol, reactions 107-21-1, Ethylene glycol, reactions  
107-25-5, Methyl vinyl ether 108-24-7, Acetic anhydride  
115-07-1, Propylene, reactions 115-77-5, Pentaerythritol,  
reactions 123-35-3, Myrcene 543-39-5 7664-41-7, Ammonia,  
reactions 7732-18-5, Water, reactions 30700-92-6  
(manufacture of acrolein and acrolein derivs. from Diels-Alder  
reaction or Michael addition)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L29 ANSWER 5 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2000:909250 HCPLUS Full-text  
DOCUMENT NUMBER: 134:43711  
TITLE: Oxidative processes for the manufacture of  
acrolein from propylene and oxygen  
INVENTOR(S): Etzkorn, William George; Brockwell, Jonathan  
Lester; Young, Mark Anderson; Maher, John  
Michael; Warren, Barbara Knight  
PATENT ASSIGNEE(S): Union Carbide Chemicals and Plastics  
Technology Corporation, USA  
SOURCE: U.S., 10 pp., Cont.-in-part of Appl. No.  
PCT/US97/05100.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6166263	A	20001226	US 1998-169335	1998 1009
WO 9736848	A1	19971009	WO 1997-US5100	1997 0327
<--				
W: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG RW: AU, BB, BG, BR, CA, CN, CZ, HU, IS, JP, KP, KR, LK, LR, LV, MK, MX, NO, NZ, PL, SG, SI, TR, TT, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
PRIORITY APPLN. INFO.:			WO 1997-US5100	A2
				1997 0327
<--				
US 1996-14507P P 1996 0401				
<--				
US 1996-14510P P 1996 0401				
<--				
US 1996-14678P P 1996 0401				
<--				

AB Acrolein is produced in high yield and selectivity in a process comprising:  
(i) passing a propylene feedstream comprising propylene, oxygen and a recycle gas comprising propane, oxygen and carbon monoxide and/or carbon dioxide to an acrolein reaction zone where the propylene feedstream is contacted with an acrolein reaction catalyst to provide an acrolein effluent stream comprising acrolein, propane, acetaldehyde and water; (ii) passing the acrolein effluent stream to an acrolein separation zone where the acrolein effluent stream is partially condensed to provide a liquid acrolein product stream comprising acrolein, acetaldehyde and water and a recycle gas stream comprising the recycle gas; and (iii) recycling a portion of the recycle gas stream to the acrolein reaction zone. The propylene feedstream comprises 5-70 volume% propane and is effective to provide a propylene-to-acrolein reaction efficiency of 75-90 mol%. The presence of propane in the propylene-to-acrolein reaction can enhance the efficiency of the processes.

IT 74-93-1, Methanethiol, reactions  
(addition reactions of acrolein with)  
RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

IT **3268-49-3P**  
(preparation of)  
RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IC C07C045-32  
INCL 568469900  
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 23, 48  
IT **74-93-1**, Methanethiol, reactions 106-99-0, Butadiene,  
reactions 543-39-5  
(addition reactions of acrolein with)  
IT 78-19-3P 100-73-2P, 2-Formyl-3,4-dihydro-2H-pyran 504-63-2P,  
1,3-Propanediol 1321-16-0P, Tetrahydrobenzaldehyde 2806-84-0P,  
3-(Methoxy)propionaldehyde **3268-49-3P** 4454-05-1P,  
2-Methoxy-3,4-dihydro-2H-pyran 31906-04-4P, 4-(4-Hydroxy-4-  
methylpentyl)-3-cyclohexene-1-carboxaldehyde 84315-07-1P  
(preparation of)  
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L29 ANSWER 6 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2000:289080 HCPLUS Full-text  
DOCUMENT NUMBER: 132:309995  
TITLE: Processes for the manufacture of  
3-(methylthio)propanal  
INVENTOR(S): Brockwell, Jonathan L.; Young, Mark A.;  
Etzkorn, William G.; Warren, Barbara K.;  
Maher, John M.  
PATENT ASSIGNEE(S): Union Carbide Chemicals & Plastics Technology  
Corporation, USA  
SOURCE: U.S., 12 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 3  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6057481	A	20000502	US 1998-155750	1998 1001
WO 9736848	A1	19971009	WO 1997-US5100	1997 0327
<--				
W: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG RW: AU, BB, BG, BR, CA, CN, CZ, HU, IS, JP, KP, KR, LK, LR,				

LV, MK, MX, NO, NZ, PL, SG, SI, TR, TT, US, UZ, VN, AM,  
AZ, BY, KG, KZ, MD, RU, TJ, TM  
AU 9725947 A1 19971022 AU 1997-25947

1997  
0327

JP 2002503206 T2 20020129 JP 1997-535453

1997  
0327

JP 3490459 B2 20040126 AT 1997-917687

1997  
0327

PRIORITY APPLN. INFO.:

US 1996-14507P

P  
1996  
0401

US 1996-14510P

P  
1996  
0401

US 1996-14678P

P  
1996  
0401

WO 1997-US5100

W  
1997  
0327

<--

AB A process for the conversion of propylene to 3- (methylthio)propanal (I) by converting propylene to acrolein and converting the acrolein with Me mercaptan to I is described. The processes utilize oxygen and recycle propane to the acrolein reactor. The process feeds can comprise, propane, propylene or their mixts. The presence of propane in the propylene-to-acrolein reaction can enhance the efficiency of the processes.

IT 3268-49-3P, 3-(Methylthio)propanal

(processes for the manufacture of 3-(methylthio)propanal)

RN 3268-49-3 HCAPLUS

CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

MeS—CH<sub>2</sub>—CH<sub>2</sub>—CHO

IT 74-93-1, Methyl mercaptan, reactions

(processes for the manufacture of 3-(methylthio)propanal)

RN 74-93-1 HCAPLUS

CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C—SH

IC ICM C07C319-02

INCL 568041000

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

Section cross-reference(s): 23, 48

IT 3268-49-3P, 3-(Methylthio)propanal

(processes for the manufacture of 3-(methylthio)propanal)

IT 74-93-1, Methyl mercaptan, reactions 74-98-6, Propane, reactions

(processes for the manufacture of 3-(methylthio)propanal)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 7 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:450926 HCPLUS Full-text

DOCUMENT NUMBER: 131:89346

TITLE: Continuous process for the preparation of 3-(methylthio)propanal from acrolein and methyl mercaptan

INVENTOR(S): Hsu, Yung C.; Ruest, Dennis A.

PATENT ASSIGNEE(S): Novus International, Inc., USA

SOURCE: U.S., 26 pp.  
CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 4

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5925794	A	19990720	US 1996-668572	1996 0620
US 5352837	A	19941004	US 1993-73763	1993 0608
US 5637766	A	19970610	US 1995-557699	1995 1113
CN 1188470	A	19980722	CN 1996-194943	1996 0621
CN 1120834	B	20030910		<--
US 6031138	A	20000229	US 1998-102025	1998 0622
US 6320076	B1	20011120	US 1999-470407	1999 1222
PRIORITY APPLN. INFO.:			US 1993-73763	A2 1993 0608
			US 1994-273216	B1

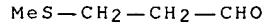
		1994
		0711
<--		
US 1995-421P	P	1995
		0622
<--		
US 1995-557699	A2	1995
		1113
<--		
US 1996-667099	B1	1996
		0620
<--		
US 1996-668572	B1	1996
		0620
<--		
US 1998-102025	A3	1998
		0622
<--		

AB 3-(Methylthio)propanal (I) is prepared in a continuous process in which a liquid reaction medium (containing I, Me mercaptan, and an addition reaction catalyst) is contacted with a gaseous acrolein feed stream (containing acrolein vapor and noncondensable gas) in a gas-liquid contact zone. Acrolein is transferred from the acrolein feed stream to the reaction medium and reacted with Me mercaptan in that medium to produce a liquid reaction product containing I. The noncondensable gas is separated from the liquid reaction product, the reaction product is divided into a product fraction and a circulating fraction, and the circulating fraction is recycled to the gas-liquid contact zone. Process flow diagrams are presented.

IT 3268-49-3P, 3-(Methylthio)propanal  
(continuous process for the preparation of 3-(methylthio)propanal  
from acrolein and Me mercaptan)

RN 3268-49-3 HCPLUS

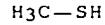
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IT 74-93-1, Methyl mercaptan, reactions  
(continuous process for the preparation of 3-(methylthio)propanal  
from acrolein and Me mercaptan)

RN 74-93-1 HCPLUS

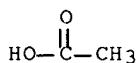
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



IC ICM C07C319-00  
INCL 568041000  
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

Section cross-reference(s): 23, 48  
 IT 107-02-8P, 2-Propenal, preparation 3268-49-3P,  
 3-(Methylthio)propanal 59121-24-3P, 4-(Methylthio)butyronitrile  
 (continuous process for the preparation of 3-(methylthio)propanal  
 from acrolein and Me mercaptan)  
 IT 74-90-8, Hydrogen cyanide, reactions 74-93-1, Methyl  
 mercaptan, reactions 115-07-1, 1-Propene, reactions  
 (continuous process for the preparation of 3-(methylthio)propanal  
 from acrolein and Me mercaptan)  
 REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L29 ANSWER 8 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1998:523142 HCPLUS Full-text  
 DOCUMENT NUMBER: 129:275013  
 TITLE: Quantification of potent odorants in Camembert  
 cheese and calculation of their odor activity  
 values  
 AUTHOR(S): Kubickova, J.; Grosch, W.  
 CORPORATE SOURCE: Deutsche Forschungsanstalt fur  
 Lebensmittelchemie, Garching, D-85748, Germany  
 SOURCE: International Dairy Journal (1998),  
 8(1), 17-23  
 CODEN: IDAJE6; ISSN: 0958-6946  
 PUBLISHER: Elsevier Science Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Sixteen neutral compds., which had been screened in preceding dilution expts.  
 as potent odorants of Camembert cheese, were quantified by stable isotope  
 dilution assays in two samples of this cheese. In addition, seven volatile  
 acids were determined by using conventional methods. The odor activity values  
 (OAVs) of the compds. were calculated by dividing their concns. in the cheese  
 samples by their odor thresholds in sunflower oil (neutral compds.) and water  
 (acids). In the class of the neutral odorants, the highest OAVs were found  
 for methanethiol, methional and di-Me sulfide all of which contributed to the  
 sulfury, garlic-like note in the odor profile of Camembert. Although the OAV  
 of 1-octen-3-ol was relatively low, this alc. and the corresponding ketone  
 were responsible for the mushroom-like note. In the acidic fraction, acetic,  
 butyric and capric acid showed the highest OAVs.  
 IT 64-19-7, Acetic acid, biological studies 74-93-1  
 , Methanethiol, biological studies 3268-49-3, Methional  
 (quantification of potent odorants in Camembert cheese and  
 calcn. of odor activity values)  
 RN 64-19-7 HCPLUS  
 CN Acetic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 74-93-1 HCPLUS  
 CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C-SH

RN 3268-49-3 HCAPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

MeS—CH<sub>2</sub>—CH<sub>2</sub>—CHO

CC 17-8 (Food and Feed Chemistry)  
IT 60-12-8, 2-Phenylethanol **64-19-7**, Acetic acid,  
biological studies 66-25-1, Hexanal **74-93-1**,  
Methanethiol, biological studies 75-07-0, Acetaldehyde,  
biological studies 75-18-3, Dimethyl sulfide 79-09-4,  
Propionic acid, biological studies 103-45-7, Phenethyl acetate  
107-92-6, Butyric acid, biological studies 112-12-9,  
2-Undecanone 124-07-2, Caprylic acid, biological studies  
142-62-1, Caproic acid, biological studies 334-48-5, Decanoic  
acid 431-03-8, 2,3-Butanedione 503-74-2, 3-Methylbutyric acid  
590-86-3, 3-Methylbutanal 705-86-2,  $\delta$ -Decalactone  
1618-26-4, Methylene bis(methylsulfide) **3268-49-3**,  
Methional 3391-86-4, 1-Octen-3-ol 3658-80-8, Dimethyl  
trisulfide 4312-99-6, 1-Octen-3-one 85213-22-5,  
2-Acetyl-1-pyrroline  
(quantification of potent odorants in Camembert cheese and  
calcn. of odor activity values)

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L29 ANSWER 9 OF 35 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1998:31172 HCAPLUS Full-text  
DOCUMENT NUMBER: 128:114715  
TITLE: Processes for the preparation of  
3-(methylthio)propanal and  
2-hydroxy-4-(methylthio)butanenitrile  
INVENTOR(S): Blackburn, Thomas F.; Pellegrin, Paul F.  
PATENT ASSIGNEE(S): Novus International, Inc., USA  
SOURCE: U.S., 9 pp., Cont.-in-part of U.S. 5,663,409.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 2  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5705675	A	19980106	US 1995-581249	1995 1229 ---
US 5663409	A	19970902	US 1995-476356	1995 0607 . ---
ZA 9604335	A	19960820	ZA 1996-4335	

1996  
0528

<--

WO 9640631 A1 19961219 WO 1996-US9060

1996  
0604

<--

W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE,  
DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ,  
LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ,  
PL, PT, RO, RU, SD, SE, SG, SI  
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR,  
GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI,  
CM, GA, GN, ML

AU 9659873 A1 19961230 AU 1996-59873

1996  
0604

<--

AU 714151 B2 19991223  
EP 830341 A1 19980325 EP 1996-917222

1996  
0604

<--

EP 830341 B1 20010905  
R: BE, DE, DK, ES, FR, GB, IT, LU, NL, MC, PT, IE  
CN 1189818 A 19980805 CN 1996-195190

1996  
0604

<--

CN 1092184 B 20021009  
JP 11511119 T2 19990928 JP 1997-501471

1996  
0604

<--

RU 2173681 C2 20010920 RU 1998-100220

1996  
0604

<--

ES 2160819 T3 20011116 ES 1996-917222

1996  
0604

<--

PT 830341 T 20011228 PT 1996-917222

1996  
0604

<--

CN 1510030 A 20040707 CN 2002-2002126457

1996  
0604

<--

PRIORITY APPLN. INFO.: US 1995-476356 A2

1995  
0607

<--

US 1995-581249 A

1995  
1229

<--

WO 1996-US9060 W

1996

&lt;--

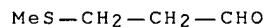
OTHER SOURCE(S): CASREACT 128:114715; MARPAT 128:114715

AB A catalytic processes for the preparation of 3-(methylthio)propanal and 2-hydroxy-4-(methylthio)butanenitrile using novel addition catalysts is described. The novel addition catalysts include: triisopropanolamine, nicotinamide, imidazole, benzimidazole, 2-fluoropyridine, poly-4-vinylpyridine, 4-dimethylaminopyridine, picoline, pyrazine, trialkylamines, and tertiary amines. E.g., reaction of MeSH and acrolein in presence of poly-4-vinylpyridine gave 89.0% 3-(methylthio)propanal. The aldehyde product, containing the poly-4-vinylpyridine catalyst, was converted to the nitrile in the same reactor by treatment with HCN. The yield of nitrile was 72.9%.

IT **3268-49-3P**, 3-(Methylthio)propanal  
(preparation of (methylthio)propanal and  
hydroxy(methylthio)butanenitrile)

RN 3268-49-3 HCAPLUS

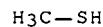
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IT **74-93-1**, Methyl mercaptan, reactions  
(preparation of (methylthio)propanal and  
hydroxy(methylthio)butanenitrile)

RN 74-93-1 HCAPLUS

CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



IC ICM C07C323-22  
ICS C07C253-00; C07C253-30; C07C319-20

INCL 558351000

CC 23-9 (**Aliphatic** Compounds)

Section cross-reference(s): 45

IT **3268-49-3P**, 3-(Methylthio)propanal  
(preparation of (methylthio)propanal and  
hydroxy(methylthio)butanenitrile)

IT **74-93-1**, Methyl mercaptan, reactions 107-02-8, Acrolein,  
reactions  
(preparation of (methylthio)propanal and  
hydroxy(methylthio)butanenitrile)

REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L29 ANSWER 10 OF 35 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:165266 HCAPLUS Full-text

DOCUMENT NUMBER: 126:157183

TITLE: Process for the continuous preparation of  
3-(methylthio)propanal from acrolein and  
methyl mercaptan

INVENTOR(S): Hsu, Yung C.

PATENT ASSIGNEE(S): Novus International, Inc., USA

SOURCE: PCT Int. Appl., 85 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 4

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
WO 9700858	A1	19970109	WO 1996-US10920	1996 0621
<--				
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML				
US 5905171	A	19990518	US 1996-667099	1996 0620
<--				
AU 9663959	A1	19970122	AU 1996-63959	1996 0621
<--				
AU 726921	B2	20001123		
EP 842149	A1	19980520	EP 1996-923452	1996 0621
<--				
EP 842149	B1	20030205		
R: BE, DE, DK, ES, FR, GB, IT, LU, NL, MC, PT, IE				
CN 1188470	A	19980722	CN 1996-194943	1996 0621
<--				
CN 1120834	B	20030910		
JP 11508266	T2	19990721	JP 1997-504005	1996 0621
<--				
RU 2172734	C2	20010827	RU 1998-100590	1996 0621
<--				
ES 2192607	T3	20031016	ES 1996-923452	1996 0621
<--				
PRIORITY APPLN. INFO.:		US 1995-421P	P	1995 0622
<--				
		US 1996-667099	A	1996 0620

<--

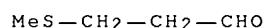
OTHER SOURCE(S): CASREACT 126:157183

AB In the title process, a liquid reaction, medium containing 3-(methylthio)propanal and a catalyst for the reaction between Me mercaptan and acrolein, is contacted with a gaseous acrolein feed stream in a gas-liquid contact zone. The gaseous acrolein feed stream comprises acrolein vapor and noncondensable gas and the acrolein is transferred from the acrolein feed stream to the reaction medium. Me mercaptan, introduced into the reaction medium, reacts with the acrolein in that medium, producing a liquid reaction product containing 3-(methylthio)propanal. The noncondensable gas is then separated from the liquid reaction product the reaction product is divided into a produce fraction and a circulating fraction, and the circulating fraction is recycled to the gas/liquid contact zone. Process flow diagrams are presented.

IT 3268-49-3P, 3-(Methylthio)propanal  
(process for the continuous preparation of 3-(methylthio)propanal  
from acrolein and Me mercaptan)

RN 3268-49-3 HCPLUS

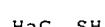
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IT 74-93-1, Methanethiol, reactions  
(process for the continuous preparation of 3-(methylthio)propanal  
from acrolein and Me mercaptan)

RN 74-93-1 HCPLUS

CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



IC ICM C07C319-18

ICS C07C323-22

CC 23-14 (Aliphatic Compounds)

Section cross-reference(s): 45, 48

IT 3268-49-3P, 3-(Methylthio)propanal

(process for the continuous preparation of 3-(methylthio)propanal  
from acrolein and Me mercaptan)

IT 74-93-1, Methanethiol, reactions 107-02-8, Acrolein,  
reactions

(process for the continuous preparation of 3-(methylthio)propanal  
from acrolein and Me mercaptan)

L29 ANSWER 11 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:111227 HCPLUS Full-text

DOCUMENT NUMBER: 126:117741

TITLE: Processes and catalysts for the preparation of  
3-(methylthio)propanal and  
2-hydroxy-4-(methylthio)butanenitrile

INVENTOR(S): Blackburn, Thomas F.; Pellegrin, Paul F.;  
 Kranz, Allen H.  
 PATENT ASSIGNEE(S): Novus International, Inc., USA  
 SOURCE: PCT Int. Appl., 36 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9640631	A1	19961219	WO 1996-US9060	1996 0604
<--				
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML				
US 5663409	A	19970902	US 1995-476356	1995 0607
<--				
US 5705675	A	19980106	US 1995-581249	1995 1229
<--				
AU 9659873	A1	19961230	AU 1996-59873	1996 0604
<--				
AU 714151	B2	19991223		
EP 830341	A1	19980325	EP 1996-917222	1996 0604
<--				
EP 830341	B1	20010905		
R: BE, DE, DK, ES, FR, GB, IT, LU, NL, MC, PT, IE				
JP 11511119	T2	19990928	JP 1997-501471	1996 0604
<--				
RU 2173681	C2	20010920	RU 1998-100220	1996 0604
<--				
PRIORITY APPLN. INFO.:			US 1995-476356	A 1995 0607
<--				
			US 1995-581249	A 1995 1229
<--				
			WO 1996-US9060	W

1996  
0604

<--

OTHER SOURCE(S): MARPAT 126:117741

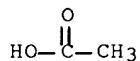
AB 3-(Methylthio)propanal (I) is prepared by the addition reaction of MeSH with acrolein, 2-hydroxy-4-(methylthio)butanenitrile is prepared by the addition reaction of I with HCN, and both reactions are conducted in the presence of an addition reaction catalysts comprising  $\geq 1$  organic base(s) (e.g., triisopropanolamine, nicotinamide, imidazole, benzimidazole, 2-fluoropyridine, poly-4-vinylpyridine, 4-dimethylaminopyridine, picoline, pyrazine, trialkylamines, etc.).

IT 64-19-7, Acetic acid, reactions 74-93-1,

Methanethiol, reactions 107-02-8, Acrolein, reactions (processes and catalysts for the preparation of 3-(methylthio)propanal and 2-hydroxy-4-(methylthio)butanenitrile)

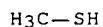
RN 64-19-7 HCPLUS

CN Acetic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



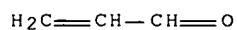
RN 74-93-1 HCPLUS

CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



RN 107-02-8 HCPLUS

CN 2-Propenal (9CI) (CA INDEX NAME)



IT 3268-49-3P, 3-(Methylthio)propanal

(processes and catalysts for the preparation of 3-(methylthio)propanal and 2-hydroxy-4-(methylthio)butanenitrile)

RN 3268-49-3 HCPLUS

CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IC ICM C07C319-18

ICS C07C319-20; C07C323-22; C07C323-60

CC 23-19 (Aliphatic Compounds)

Section cross-reference(s): 45, 67

IT 64-19-7, Acetic acid, reactions 74-90-8, Hydrogen cyanide, reactions 74-93-1, Methanethiol, reactions 107-02-8, Acrolein, reactions 7664-38-2, Phosphoric acid, reactions 7664-93-9, Sulfuric acid, reactions (processes and catalysts for the preparation of 3-(methylthio)propanal and 2-hydroxy-4-(methylthio)butanenitrile)

IT 3268-49-3P, 3-(Methylthio)propanal (processes and catalysts for the preparation of 3-(methylthio)propanal and 2-hydroxy-4-(methylthio)butanenitrile)

L29 ANSWER 12 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1996:537082 HCPLUS Full-text  
 DOCUMENT NUMBER: 125:167345  
 TITLE: Preparation of 2-hydroxy-4-(methylmercapto)butyric acid from acrolein and methyl mercaptan without using sulfuric acid  
 INVENTOR(S): Matsuoka, Kazuyuki  
 PATENT ASSIGNEE(S): Daicel Chem, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

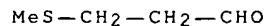
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08157447	A2	19960618	JP 1993-159132	1993 0629
<--				
JP 3169103	B2	20010521	JP 1993-159132	1993 0629
<--				
PRIORITY APPLN. INFO.:				

AB MeS(CH<sub>2</sub>)<sub>2</sub>CH(OH)CO<sub>2</sub>H (I), which is used as a feed additive, is prepared from CH<sub>2</sub>:CHCHO and MeSH, via MeS(CH<sub>2</sub>)<sub>2</sub>CHO, MeS(CH<sub>2</sub>)<sub>2</sub>CH(OH)CN (II), MeS(CH<sub>2</sub>)<sub>2</sub>CH(OH)CONH<sub>2</sub> (III), and esters of MeS(CH<sub>2</sub>)<sub>2</sub>CH(OH)CO<sub>2</sub>H. Hydration of II in aqueous Me<sub>2</sub>CO in the presence of MnO<sub>2</sub> at 60° for 6 h gave 89.0% III, which was autoclaved with MeOH and Pb nitrate at 170° and 20 kg/cm<sup>2</sup> for 5 h with removing NH<sub>3</sub> to afford MeS(CH<sub>2</sub>)<sub>2</sub>CH(OH)CO<sub>2</sub>Me at 83% conversion and 85% selectivity. Hydrolysis of the ester with Amberlyst 15 in H<sub>2</sub>O at 95° for 5 h gave I at 98.8% conversion and 97.1% selectivity.

IT 3268-49-3P, 3-(Methylmercapto)propionaldehyde (preparation of hydroxy(methylmercapto)butyric acid from acrolein and Me mercaptan without using sulfuric acid)

RN 3268-49-3 HCPLUS

CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IT 74-93-1, Methyl mercaptan, reactions (preparation of hydroxy(methylmercapto)butyric acid from acrolein and Me mercaptan without using sulfuric acid)

RN 74-93-1 HCAPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C—SH

IC ICM C07C323-52  
ICS C07C319-18; C07C319-20  
CC 23-17 (**Aliphatic** Compounds)  
Section cross-reference(s): 17  
IT **3268-49-3P**, 3-(Methylmercapto)propionaldehyde  
17773-41-0P, 2-Hydroxy-4-(methylthio)butyronitrile 49540-21-8P,  
2-Hydroxy-4-(methylthio)butyramide 52703-96-5P  
(preparation of hydroxy(methylmercapto)butyric acid from acrolein  
and Me mercaptan without using sulfuric acid)  
IT **74-93-1**, Methyl mercaptan, reactions 107-02-8,  
2-Propenal, reactions  
(preparation of hydroxy(methylmercapto)butyric acid from acrolein  
and Me mercaptan without using sulfuric acid)

L29 ANSWER 13 OF 35 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1996:252233 HCAPLUS Full-text

DOCUMENT NUMBER: 124:288769

TITLE: Preparation of 3-(methylthio)propanal

INVENTOR(S): Hsu, Yung C.; Ruest, Dennis A.

PATENT ASSIGNEE(S): Novus International, Inc., USA

SOURCE: PCT Int. Appl., 70 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 4

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
WO 9601810	A1	19960125	WO 1995-US8532	1995 0706 --
W: AM, AT, AU, BB, BG, BR, BY, CA, CN, CZ, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LV, MD, MG, MN, MW, MX, NO, NZ, PL, RO, RU, SD, SG, SI, SK, TJ, TM, TT, UA, UG, UZ, VN RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9530939	A1	19960209	AU 1995-30939	1995 0706 --
AU 699841	B2	19981217		
EP 770062	A1	19970502	EP 1995-926631	1995 0706 --
R: BE, DE, DK, ES, FR, GB, IE, IT, LU, MC, NL, PT				

CN 1152913	A	19970625	CN 1995-194068	
				1995 0706
<--				
JP 10504812	T2	19980512	JP 1996-504405	
				1995 0706
<--				
RU 2149159	C1	20000520	RU 1997-102147	
				1995 0706
<--				
CN 1222507	A	19990714	CN 1998-115072	
				1998 0624
<--				
PRIORITY APPLN. INFO.:		US 1994-273216	A	
				1994 0711
<--				
		WO 1995-US8532	W	
				1995 0706
<--				

AB The title process comprises condensation of CH<sub>2</sub>:CHCHO from a feed stream in a gas/liquid contact zone containing MeSCH<sub>2</sub>CH<sub>2</sub>CHO, MeSH, and catalyst, separation of non-condensable material from the feed stream, and withdrawal of liquid which is divided into a product stream and a stream which is returned to the gas/liquid contact zone.

IT 3268-49-3P, 3-(Methylthio)propanal  
(preparation of 3-(methylthio)propanal).

RN 3268-49-3 HCPLUS

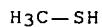
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IT 74-93-1, Methanethiol, reactions  
(preparation of 3-(methylthio)propanal)

RN 74-93-1 HCPLUS

CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



IC ICM C07C323-50  
ICS C07C323-51

CC 23-14 (Aliphatic Compounds)

IT 3268-49-3P, 3-(Methylthio)propanal  
(preparation of 3-(methylthio)propanal)

IT 74-93-1, Methanethiol, reactions 107-02-8, Acrolein,  
reactions  
(preparation of 3-(methylthio)propanal)

ACCESSION NUMBER: 1995:472534 HCAPLUS Full-text

DOCUMENT NUMBER: 122:289231

TITLE: Thermal generation of flavor compounds from thiamin and various amino acids

AUTHOR(S): Guentert, M.; Bertram, H. -J.; Hopp, R.; Silberzahn, W.; Sommer, H.; Werkhoff, P.

CORPORATE SOURCE: Haarmann &amp; Reimer GmbH, Corporate Research, Holzminden, D-3450, Germany

SOURCE: Recent Dev. Flavor Fragrance Chem., Proc. Int. Haarmann Reimer Symp., 3rd (1993), 215-40. Editor(s): Hopp, Rudolf; Mori, Kenji. VCH: Weinheim, Germany.

CODEN: 60ZGAH

DOCUMENT TYPE: Conference

LANGUAGE: English

AB Aqueous solns. of pure thiamin hydrochloride as well as mixts. of thiamin hydrochloride with cysteine hydrochloride and of thiamin hydrochloride with methionine were heated in an autoclave. The resulting flavor compds. were obtained by the simultaneous distillation/extraction procedure according to Likens and Nickerson. The concs. were prepared by medium-pressure liquid chromatog. on silica gel using a pentane-diethyl ether gradient. The fractions were subsequently analyzed by capillary gas chromatog. (HRGC) and capillary gas chromatog.-mass spectrometry (HRGC/MS). Various unknown compds. were isolated by preparative capillary gas chromatog. in microgram quantities to elucidate their structures by IR and NMR spectroscopy and to check their olfactory properties. The spectroscopic data and sensory impressions are given. Most of the analyzed flavor compds. were synthesized. In particular, a series of new heterocyclic S-containing constituents with interesting taste properties was identified and confirmed by synthesis. Most of the degradation flavor compds. of pure thiamin contained sulfur and/or nitrogen. Many of these were heterocyclic constituents. The resp. mixts. with cysteine or methionine still led mainly to the formation of these thiamin degradation compds. but there was a distinctive addnl. effect caused by the main degradation products of the two amino acids which are hydrogen sulfide and mercaptoacetaldehyde (from cysteine) as well as methanethiol and methional (from methionine). The direct comparison between the flavor patterns of pure thiamin and of thiamin with cysteine and methionine resp., made it possible to study the influences of the different precursors on the resulting flavor compds. The explanation for the occurrence of the identified volatiles resulted in various proposals for the formation pathways of the thermal degradation reactions. To investigate the sensorially most relevant flavor compds. of the different mixts. aroma extract dilution analyses (AEDA) according to Grosch were made. The flavor dilution factors (FD) were calculated and are discussed. Addnl., the taste threshold values of various S-containing compds. in water were determined

IT 74-93-1, Methanethiol, biological studies

(formation and reaction of amino acid degradation products in food model)

RN 74-93-1 HCAPLUS

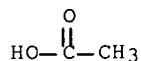
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C-SHIT 64-19-7, Acetic acid, formation (nonpreparative)  
3268-49-3, Methional

(thermal generation of flavor compds. from thiamin and various amino acids)

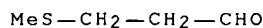
RN 64-19-7 HCAPLUS

CN Acetic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 3268-49-3 HCAPLUS

CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



CC 17-2 (Food and Feed Chemistry)

IT 74-93-1, Methanethiol, biological studies 7783-06-4,

Hydrogen sulfide, biological studies

(formation and reaction of amino acid degradation products in food model)

IT 64-19-7, Acetic acid, formation (nonpreparative)

137-00-8, Sulfurol 600-14-6, 2,3-Pentanedione 624-92-0,

Dimethyl disulfide 656-53-1 2527-76-6, 2-Methyl-3-

thiophenethiol 3268-49-3, Methional 3658-80-8,

Dimethyltrisulfide 3760-25-6 4124-63-4, Mercaptoacetaldehyde 5616-51-3, 2-Methyl-1,3-dithiolane 5756-24-1,

Dimethyltetrasulfide 17042-24-9, 2-Mercapto-3-pentanone

19788-49-9, Ethyl 2-mercaptopropanoate 26486-13-5,

2-Methyl-4,5-dihydro-3-furanthiol 28588-74-1,

2-Methyl-3-furanthiol 28588-75-2, Bis-(2-methyl-3-furyl)disulfide 31331-53-0, 1-(Methylthio)ethanethiol

34047-39-7, 4-(Methylthio)-2-butanone 40789-98-8,

3-Mercapto-2-butanone 65505-17-1, 2-Methyl-3-(methyldithio)furan

67633-97-0, 3-Mercapto-2-pentanone 85196-66-3 91265-97-3

(thermal generation of flavor compds. from thiamin and various amino acids)

L29 ANSWER 15 OF 35 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:183935 HCAPLUS Full-text

DOCUMENT NUMBER: 122:9491

TITLE: Continuous process for preparation of 3-(methylthio)propanal from a gaseous acrolein feed stream

INVENTOR(S): Hsu, Yung C.; Ruest, Dennis A.

PATENT ASSIGNEE(S): Novus International, Inc., USA

SOURCE: U.S., 16 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 4

PATENT INFORMATION:

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE

-----

US 5352837 A 19941004 US 1993-73763  
1993  
0608

ZA 9305850 A 19940525 ZA 1993-5850  
1993  
0811

WO 9429254 A1 19941222 WO 1993-US8552  
1993  
0909

W: AT, AU, BB, BG, BR, BY, CA, CH, CZ, DE, DK, ES, FI, GB,  
HU, JP, KP, KR, KZ, LK, LU, MG, MN, MW, NL, NO, NZ, PL,  
PT, RO, RU, SD, SE, SK, UA, VN  
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL,  
PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN,  
TD, TG

AU 9351268 A1 19950103 AU 1993-51268  
1993  
0909

AU 673856 B2 19961128  
BR 9307864 A 19960123 BR 1993-7864  
1993  
0909

EP 703890 A1 19960403 EP 1993-922171  
1993  
0909

EP 703890 B1 19990407  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC,  
NL, PT, SE

JP 09501145 T2 19970204 JP 1993-501709  
1993  
0909

RU 2118314 C1 19980827 RU 1996-100238  
1993  
0909

EP 889029 A2 19990107 EP 1998-114518  
1993  
0909

EP 889029 A3 20020313  
R: BE, DE, DK, ES, FR, GB, IT, LU, NL, MC, PT, IE  
AT 178594 E 19990415 AT 1993-922171  
1993  
0909

ES 2131120 T3 19990716 ES 1993-922171  
1993  
0909

CN 1096779 A 19941228 CN 1993-118591  
1993  
1009

CN 1041414	B	19981230	<--	
US 5637766	A	19970610	US 1995-557699	1995 1113
<--				
US 5925794	A	19990720	US 1996-668572	1996 0620
<--				
US 5744647	A	19980428	US 1996-679701	1996 0711
<--				
US 6031138	A	20000229	US 1998-102025	1998 0622
<--				
US 6320076	B1	20011120	US 1999-470407	1999 1222
<--				
US 2002173677	A1	20021121	US 2001-972748	2001 1005
<--				
US 6548701	B2	20030415	US 1993-73763	A 1993 0608
<--				
EP 1993-922171				
A3 1993 0909				
<--				
WO 1993-US8552				
W 1993 0909				
<--				
US 1994-273216				
B1 1994 0711				
<--				
US 1995-421P				
P 1995 0622				
<--				
US 1995-557699				
A2 1995 1113				
<--				
US 1996-667099				
B1 1996 0620				
<--				
US 1996-668572				
B1 1996 0620				
<--				
US 1998-102025				
A3				

1998  
0622

<--  
US 1999-470407 A1  
1999  
1222

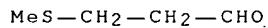
<--

AB A process for the continuous preparation of 3-(methylthio)propanal. A liquid reaction medium is contacted with a gaseous acrolein feed stream in a gas/liquid contact zone. The reaction medium contains 3-(methylthio)propanal, Me mercaptan and a catalyst for the reaction between Me mercaptan and acrolein. The gaseous acrolein feed stream comprises acrolein vapor and non-condensable gas. Acrolein is transferred from the acrolein feed stream to the reaction medium and reacts with Me mercaptan in that medium to produce a liquid reaction product containing 3-(methylthio)propanal. The non-condensable gas is separated from the liquid reaction product. The reaction product is divided into a product fraction and a circulating fraction, and the circulating fraction is recycled to the gas/liquid contact zone.

IT **3268-49-3P**, 3-(Methylthio)propanal  
(continuous process for preparation of 3-(methylthio)propanal from a gaseous acrolein feed stream)

RN 3268-49-3 HCPLUS

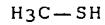
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IT **74-93-1**, Methyl mercaptan, reactions  
(continuous process for preparation of 3-(methylthio)propanal from a gaseous acrolein feed stream)

RN 74-93-1 HCPLUS

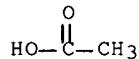
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



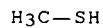
IC ICM C07C323-50  
ICS C07C323-51  
INCL 568041000  
CC 23-14 (**Aliphatic** Compounds)  
Section cross-reference(s): 45  
IT **3268-49-3P**, 3-(Methylthio)propanal  
(continuous process for preparation of 3-(methylthio)propanal from a gaseous acrolein feed stream)  
IT **74-93-1**, Methyl mercaptan, reactions  
(continuous process for preparation of 3-(methylthio)propanal from a gaseous acrolein feed stream)

L29 ANSWER 16 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1994:161921 HCPLUS Full-text  
DOCUMENT NUMBER: 120:161921  
TITLE: Microwave and thermally induced Maillard reactions  
AUTHOR(S): Yaylayan, V. A.; Forage, N. G.; Mandeville, S.

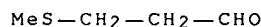
CORPORATE SOURCE: Dep. Food Sci. Agric. Chem., McGill Univ.,  
 Ate. Anne de Bellevue, QC, H9X 3V9, Can.  
 SOURCE: ACS Symposium Series (1994),  
 543 (Thermally Generated Flavors), 449-56  
 CODEN: ACSMC8; ISSN: 0097-6156  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB The effect of amino acid type on the generation of Maillard aromas under microwave irradiation in an open system was evaluated by mixing different combinations of amino acids with the same reducing sugars and characterizing the aromas produced as caramel, meaty, nutty, fragrant, vegetable and baked. The amino acids were divided into five categories: aliphatic, aromatic, basic, acidic and sulfur-containing. Certain trends emerged after anal. of the results that relate the presence of a specific amino acid category in the reaction mixture to a corresponding aroma note produced after microwave heating. The presence of amino acids with alkyl side chains was essential for the generation of caramel notes, sulfur-containing amino acids for meaty type notes and basic amino acids for nutty and baked notes. Selected formulations were also subjected to conventional heating and their sensory properties and chemical composition (by GC/MS anal.) were compared to those from microwave treated samples. No significant differences were observed between the two samples.  
 IT 64-19-7, Acetic acid, reactions 74-93-1,  
 Methanethiol, reactions 3268-49-3, 3-Methylthio propanal  
 (formation of, in Maillard reaction, heat and microwave treatment in relation to)  
 RN 64-19-7 HCPLUS  
 CN Acetic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 74-93-1 HCPLUS  
 CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



RN 3268-49-3 HCPLUS  
 CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



CC 17-2 (Food and Feed Chemistry)  
 IT 64-18-6, Formic acid, reactions 64-19-7, Acetic acid, reactions 67-47-0, HMF 74-93-1, Methanethiol, reactions 75-07-0, Acetaldehyde, reactions 78-84-2, 2-Methylpropanal 96-17-3, 2-Methylbutanal 98-00-0, 2-Furan methanol 98-01-1,

2-Furancarboxaldehyde, reactions 108-31-6, 2,5-Furandione, reactions 110-00-9, Furan 116-09-6, 1-Hydroxy-2-propanone 122-78-1, Benzene acetaldehyde 123-72-8, Butanal 142-08-5, 2-(1H)-Pyridinone 290-37-9, Pyrazine 497-23-4, 2-(5H)-Furanone 534-22-5, 2-Methylfuran 590-86-3, 3-Methylbutanal 616-43-3, 3-Methylpyrrole 620-02-0, 5-Methyl-2-furancarboxaldehyde 624-92-0, Dimethyl disulfide 1073-96-7 1192-62-7, 1-(2-Furanyl)ethanone **3268-49-3**, 3-Methylthio propanal 3658-77-3 3658-80-8, Dimethyl trisulfide 28564-83-2 153315-58-3  
 (formation of, in Maillard reaction, heat and microwave treatment in relation to)

L29 ANSWER 17 OF 35 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1994:133858 HCAPLUS Full-text  
 DOCUMENT NUMBER: 120:133858  
 TITLE: Process for producing 2-hydroxy-4-methylthiobutanoic acid  
 INVENTOR(S): Matsuoka, Kazuyuki  
 PATENT ASSIGNEE(S): Daicel Chemical Industries, Ltd., Japan  
 SOURCE: PCT Int. Appl., 21 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
WO 9323372	A1	19931125	WO 1993-JP659	1993 0520
<--				
W: US				
RW: BE, DE, FR, GB				
JP 06049020	A2	19940222	JP 1993-143026	1993 0520
<--				
JP 3219544	B2	20011015		
EP 601195	A1	19940615	EP 1993-910360	1993 0520
<--				
EP 601195	B1	19960828		
R: BE, DE, FR, GB				
CN 1084511	A	19940330	CN 1993-107598	1993 0521
<--				
CN 1036391	B	19971112		
US 5386056	A	19950131	US 1994-178315	1994 0112
<--				
PRIORITY APPLN. INFO.:			JP 1992-155802	A
				1992 0521
<--				

&lt;--

OTHER SOURCE(S): CASREACT 120:133858

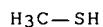
AB A process for producing 2-hydroxy-4-methylthiobutanoic acid (I) together with methanol comprises hydrating 2-hydroxy-4-methylthiobutyronitrile (II) into 2-hydroxy-4-methylthiobutanamide (III), reacting the amide with Me formate to yield Me 2-hydroxy-4-methylthiobutanoate (IV) and formamide, and hydrolyzing the Me ester. The discharge of a large amount of ammonium sulfate can be prevented, because no sulfuric acid is used as the reactant. The byproduct formamide and methanol are utilizable as the starting material of the reaction after converting them into HCN and Me formate, resp. Thus, addition of MeSH to acrolein in the presence of Cu(OAc)<sub>2</sub> and hydroquinone and addition of the resulting 3-methylthiopropionaldehyde with HCN in the presence of NaOH in MeOH gave II. Hydration of II in the presence of MnO<sub>2</sub> in aqueous acetone at 60° for 6 h to give III which was reacted with HCO<sub>2</sub>Me in MeOH containing MeONa to give IV and the byproduct formamide. Hydrolysis of IV in the presence of Amberlyst 15 in H<sub>2</sub>O at 95° gave I, while the byproduct MeOH was recovered. Formamide was fed into a stainless steel reactor packed with alumina at 500° to give HCN. MeOH was contacted with a catalyst prepared from Cu(NO<sub>3</sub>)<sub>2</sub> and ammonium chromate in a stainless steel reactor to give Me formate.

IT 74-93-1, Methanethiol, reactions

(addition reaction of, with acrolein)

RN 74-93-1 HCAPLUS

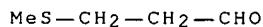
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



IT 3268-49-3P, 3-Methylthiopropionaldehyde  
(preparation and addition of, with hydrogen cyanide)

RN 3268-49-3 HCAPLUS

CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IC ICM C07C323-52

CC 23-16 (**Aliphatic** Compounds)

IT 74-93-1, Methanethiol, reactions

(addition reaction of, with acrolein)

IT 3268-49-3P, 3-Methylthiopropionaldehyde

(preparation and addition of, with hydrogen cyanide)

L29 ANSWER 18 OF 35 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1992:135528 HCAPLUS Full-text

DOCUMENT NUMBER: 116:135528

TITLE: Performance-oriented packaging standards;

changes to classification, hazard

communication, packaging and handling

requirements based on UN standards and agency

initiative

CORPORATE SOURCE: United States Dept. of Transportation,

SOURCE: Washington, DC, 20590-0001, USA  
Federal Register (1990), 55(246),  
52402-729, 21 Dec 1990  
CODEN: FEREAC; ISSN: 0097-6326

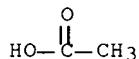
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB The hazardous materials regulations under the Federal Hazardous Materials Transportation Act are revised based on the United Nations recommendations on the transport of dangerous goods. The regulations cover the classification of materials, packaging requirements, and package marking, labeling, and shipping documentation, as well as transportation modes and handling, and incident reporting. Performance-oriented stds. are adopted for packaging for bulk and nonbulk transportation, and SI units of measurement generally replace US customary units. Hazardous material descriptions and proper shipping names are tabulated together with hazard class, identification nos., packing group, label required, special provisions, packaging authorizations, quantity limitations, and vessel stowage requirements.

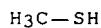
IT 64-19-7, Acetic acid, miscellaneous 74-93-1,  
Methyl mercaptan, miscellaneous 107-02-8, 2-Propenal,  
miscellaneous 3268-49-3  
(packaging and transport of, stds. for)

RN 64-19-7 HCPLUS

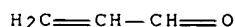
CN Acetic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



RN 107-02-8 HCPLUS  
CN 2-Propenal (9CI) (CA INDEX NAME)



RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



CC 59-6 (Air Pollution and Industrial Hygiene)

IT 50-00-0, Formaldehyde, miscellaneous 54-11-5, Nicotine  
54-11-5D, Nicotine, compds. 55-63-0, Nitroglycerin 55-68-5,  
Phenylmercuric nitrate 56-18-8, 3,3'-Iminodipropylamine  
56-23-5, miscellaneous 56-38-2, Parathion 57-06-7, Allyl  
isothiocyanate 57-14-7 57-24-9D, Strychnine, salts 60-00-4,  
EDTA, miscellaneous 60-24-2 60-29-7, Diethyl ether,  
miscellaneous 60-34-4, Methylhydrazine 60-57-1, Dieldrin  
62-38-4, Phenylmercuric acetate 62-53-3, Aniline, miscellaneous  
62-74-8, Sodium fluoroacetate 64-17-5, Ethanol, miscellaneous  
64-18-6, Formic acid, miscellaneous 64-18-6D, Formic acid,  
chloro derivs. **64-19-7**, Acetic acid, miscellaneous  
64-67-5, Diethyl sulfate 66-25-1, Hexaldehyde 67-56-1,  
Methanol, miscellaneous 67-63-0, Isopropanol, miscellaneous  
67-64-1, Acetone, miscellaneous 67-66-3, Chloroform,  
miscellaneous 68-11-1, Thioglycolic acid, miscellaneous  
68-12-2, N,N-Dimethylformamide, miscellaneous 70-11-1, Phenacyl  
bromide 70-30-4, Hexachlorophene 71-23-8, n-Propanol,  
miscellaneous 71-41-0, 1-Pentanol, miscellaneous 71-43-2,  
Benzene, miscellaneous 71-55-6, 1,1,1-Trichloroethane 74-82-8,  
Methane, miscellaneous 74-83-9, miscellaneous 74-84-0, Ethane,  
miscellaneous 74-85-1, Ethylene, miscellaneous 74-86-2,  
Acetylene, miscellaneous 74-87-3, Methyl chloride, miscellaneous  
74-88-4, Methyl iodide, miscellaneous 74-89-5, Methylamine,  
miscellaneous 74-90-8, Hydrogen cyanide, miscellaneous  
**74-93-1**, Methyl mercaptan, miscellaneous 74-95-3,  
Dibromomethane 74-96-4, Ethyl bromide 74-97-5,  
Bromochloromethane 74-98-6, Propane, miscellaneous 75-00-3,  
Ethyl chloride 75-01-4, miscellaneous 75-02-5, Vinyl fluoride  
75-04-7, Ethylamine, miscellaneous 75-05-8, Methyl cyanide,  
miscellaneous 75-07-0, Acetaldehyde, miscellaneous 75-08-1,  
Ethyl mercaptan 75-09-2, Dichloromethane, miscellaneous  
75-15-0, Carbon disulfide, miscellaneous 75-16-1, Methyl  
magnesium bromide 75-18-3, Dimethyl sulfide 75-19-4,  
Cyclopropane 75-20-7, Calcium carbide 75-21-8, Ethylene oxide,  
miscellaneous 75-21-8 75-25-2, Bromoform 75-26-3,  
2-Bromopropane 75-28-5, Isobutane 75-28-5D, Isobutane, mixts.  
75-29-6, 2-Chloropropane 75-31-0, Isopropylamine, miscellaneous  
75-33-2, Isopropyl mercaptan 75-34-3, 1,1-Dichloroethane  
75-35-4, miscellaneous 75-36-5, Acetyl chloride 75-38-7,  
1,1-Difluoroethylene 75-39-8, Acetaldehyde ammonia 75-43-4,  
Dichloromonofluoromethane 75-44-5, Phosgene 75-45-6,  
Chlorodifluoromethane 75-46-7, Trifluoromethane 75-50-3,  
Trimethylamine, miscellaneous 75-52-5, Nitromethane,  
miscellaneous 75-54-7, Methyldichlorosilane 75-55-8,  
Propylenimine 75-56-9, Propylene oxide, miscellaneous 75-59-2,  
Tetramethylammonium hydroxide 75-60-5, Cacodylic acid 75-61-6,  
Dibromodifluoromethane 75-63-8 75-71-8,  
Dichlorodifluoromethane 75-72-9, Chlorotrifluoromethane  
75-73-0, Tetrafluoromethane 75-76-3, Tetramethylsilane  
75-77-4, Trimethylchlorosilane, miscellaneous 75-78-5,  
Dimethyldichlorosilane 75-79-6, Methyltrichlorosilane 75-83-2  
75-86-5, Acetone cyanohydrin 75-87-6, Chloral 75-91-2,  
tert-Butyl hydroperoxide 75-94-5, Vinyltrichlorosilane  
76-01-7, Pentachloroethane 76-02-8, Trichloroacetyl chloride  
76-03-9, properties 76-05-1, Trifluoroacetic acid, miscellaneous  
76-06-2, Chloropicrin 76-06-2D, Chloropicrin, mixts. 76-15-3  
76-16-4, Hexafluoroethane 76-19-7, Octafluoropropane 76-22-2,  
Camphor 77-47-4, Hexachlorocyclopentadiene 77-73-6 77-78-1,  
Dimethyl sulfate 78-00-2, Tetraethyl lead 78-10-4, Tetraethyl  
silicate 78-62-6, Dimethyldiethoxysilane 78-67-1,

Azodiisobutyronitrile 78-76-2, 2-Bromobutane 78-78-4,  
Isopentane 78-79-5, Isoprene, miscellaneous 78-81-9,  
Isobutylamine 78-82-0, Isobutyronitrile 78-83-1, Isobutanol,  
miscellaneous 78-84-2, Isobutyraldehyde 78-85-3,  
Methacrylaldehyde 78-87-5, Propylene dichloride 78-89-7,  
Propylene chlorohydrin 78-90-0, 1,2-Propylenediamine 78-93-3,  
2-Butanone, miscellaneous 78-94-4, Methyl vinyl ketone,  
miscellaneous 78-95-5, Monochloroacetone 79-01-6,  
Trichloroethylene, miscellaneous 79-03-8, Propionyl chloride  
79-04-9, Chloroacetyl chloride 79-06-1, Acrylamide,  
miscellaneous 79-08-3, Bromoacetic acid 79-09-4, Propionic  
acid, miscellaneous 79-10-7, 2-Propenoic acid, miscellaneous  
79-11-8, Chloroacetic acid, miscellaneous 79-20-9, Methyl  
acetate 79-21-0, Peroxyacetic acid 79-22-1 79-24-3,  
Nitroethane 79-29-8, 2,3-Dimethylbutane 79-30-1, Isobutyryl  
chloride 79-31-2, Isobutyric acid 79-36-7, Dichloroacetyl  
chloride 79-38-9 79-41-4, miscellaneous 79-42-5 79-43-6,  
Dichloroacetic acid, miscellaneous 79-44-7, Dimethylcarbamoyl  
chloride 80-10-4, Diphenyldichlorosilane 80-15-9, Cumene  
hydroperoxide 80-17-1, Benzene sulfohydrazide 80-47-7,  
p-Menthane hydroperoxide 80-51-3, Diphenyloxide-4,4'-  
disulfohydrazide 80-56-8,  $\alpha$ -Pinene 80-62-6 81-15-2  
82-71-3 85-44-9, 1,3-Isobenzofurandione 86-50-0, Azinphos  
methyl 87-68-3, Hexachlorobutadiene 87-90-1 88-17-5,  
2-Trifluoromethylaniline 88-72-2, o-Nitrotoluene 88-73-3,  
o-Chloronitrobenzene 88-74-4, o-Nitroaniline 88-75-5,  
o-Nitrophenol 88-89-1 89-58-7, p-Nitroxylene 91-17-8,  
Decahydronaphthalene 91-20-3, Naphthalene, miscellaneous  
91-20-3D, Naphthalene, diozonide derivs. 91-22-5, Quinoline,  
miscellaneous 91-59-8,  $\beta$ -Naphthylamine 91-66-7,  
N,N-Diethylaniline 92-52-4D, Biphenyl, chloro derivs.  
92-52-4D, Biphenyl, halo derivs. 92-59-1, N-Ethyl-N-  
benzylaniline 92-87-5, Benzidine 93-58-3, Methyl benzoate  
94-17-7, p-Chlorobenzoyl peroxide 94-36-0, Benzoyl peroxide,  
miscellaneous 95-48-7, miscellaneous 95-50-1,  
o-Dichlorobenzene 95-54-5, o-Phenylenediamine, miscellaneous  
95-55-6, o-Aminophenol 95-80-7 95-85-2, 2-Amino-4-chlorophenol  
96-12-8, Dibromochloropropane 96-22-0, Diethyl ketone 96-23-1  
96-24-2, Glycerol  $\alpha$ -monochlorohydrin 96-32-2, Methyl  
bromoacetate 96-33-3 96-34-4, Methyl chloroacetate 96-37-7,  
Methyl cyclopentane 96-41-3, Cyclopentanol 97-62-1, Ethyl  
isobutyrate 97-63-2 97-64-3, Ethyl lactate 97-72-3,  
Isobutyric anhydride 97-85-8, Isobutyl isobutyrate 97-86-9  
97-88-1 97-95-0 97-96-1, 2-Ethylbutyraldehyde 98-00-0,  
Furfuryl alcohol 98-01-1, Furfural, miscellaneous 98-07-7,  
Benzotrichloride 98-08-8, Benzotrifluoride 98-09-9, Benzene  
sulfonyl chloride 98-12-4, Cyclohexyltrichlorosilane 98-13-5,  
Phenyltrichlorosilane 98-16-8, 3-Trifluoromethylaniline  
98-82-8, Isopropylbenzene 98-83-9, miscellaneous 98-85-1,  
 $\alpha$ -Methylbenzyl alcohol 98-87-3, Benzylidene chloride  
98-88-4, Benzoyl chloride 98-94-2 98-95-3, Nitrobenzene,  
miscellaneous 99-08-1, m-Nitrotoluene 99-09-2, m-Nitroaniline  
99-35-4, Trinitrobenzene 99-99-0, p-Nitrotoluene 100-00-5  
100-01-6, p-Nitroaniline, miscellaneous 100-02-7, p-Nitrophenol,  
miscellaneous 100-17-4 100-34-5, Benzene diazonium chloride  
100-36-7, N,N-Diethylethylenediamine 100-37-8,  
Diethylaminoethanol 100-39-0, Benzyl bromide 100-41-4,  
Ethylbenzene, miscellaneous  
(packaging and transport of, stds. for)

IT 100-42-5, miscellaneous 100-44-7, Benzyl chloride, miscellaneous  
100-47-0, Benzonitrile, miscellaneous 100-50-5,  
1,2,3,6-Tetrahydrobenzaldehyde 100-57-2, Phenylmercuric  
hydroxide 100-61-8, N-Methylaniline, miscellaneous 100-63-0,  
Phenylhydrazine 100-66-3, Anisole, miscellaneous 100-73-2,  
Acrolein dimer 101-25-7, N,N'-Dinitrosopentamethylenetetramine  
101-68-8 101-77-9, 4,4'-Diaminodiphenyl methane 101-83-7,  
Dicyclohexylamine 102-69-2, Tripropylamine 102-70-5,  
Triallylamine 102-81-8, Dibutylaminoethanol 102-82-9,  
Tributylamine 103-65-1, n-Propylbenzene 103-69-5,  
N-Ethylaniline 103-71-9, Phenylisocyanate, miscellaneous  
103-80-0, Phenylacetyl chloride 103-83-3, Benzylidimethylamine  
104-15-4, Toluene sulfonic acid, miscellaneous 104-51-8,  
Butylbenzene 104-75-6, 2-Ethylhexylamine 104-78-9 104-90-5,  
2-Methyl-5-ethylpyridine 105-36-2 105-37-3, Ethyl propionate  
105-39-5, Ethyl chloroacetate 105-48-6, Isopropyl chloroacetate  
105-54-4, Ethyl butyrate 105-56-6, Ethyl cyanoacetate  
105-57-7, Acetal 105-58-8, Diethyl carbonate 105-64-6,  
Isopropyl peroxydicarbonate 105-74-8, Lauroyl peroxide  
106-31-0, Butyric anhydride 106-44-5, p-Cresol, miscellaneous  
106-46-7, p-Dichlorobenzene 106-50-3, p-Phenylenediamine,  
miscellaneous 106-51-4, 2,5-Cyclohexadiene-1,4-dione,  
miscellaneous 106-63-8, Isobutyl acrylate 106-68-3, Ethyl amyl  
ketone 106-88-7, 1,2-Butylene oxide 106-89-8, miscellaneous  
106-92-3, Allyl glycidyl ether 106-93-4, Ethylene dibromide  
106-95-6, Allyl bromide, miscellaneous 106-96-7, 3-Bromopropyne  
106-97-8, Butane, miscellaneous 106-97-8D, Butane, mixts.  
106-99-0, 1,3-Butadiene, miscellaneous 107-00-6, Ethylacetylene  
**107-02-8**, 2-Propenal, miscellaneous 107-05-1, Allyl  
chloride 107-06-2, Ethylene dichloride, miscellaneous  
107-07-3, Ethylene chlorohydrin, miscellaneous 107-10-8,  
Propylamine, miscellaneous 107-11-9, Allylamine 107-12-0,  
Propionitrile 107-13-1, Acrylonitrile, miscellaneous 107-14-2,  
Chloroacetonitrile 107-15-3, Ethylenediamine, miscellaneous  
107-18-6, Allyl alcohol, miscellaneous 107-19-7, Propargyl  
alcohol 107-20-0, Chloroacetaldehyde 107-25-5, Vinylmethyl  
ether 107-29-9, Acetaldehyde oxime 107-30-2,  
Methylchloromethyl ether 107-31-3, Methyl formate 107-37-9,  
Allyltrichlorosilane 107-49-3, Tetraethyl pyrophosphate  
107-70-0 107-71-1, tert-Butyl peroxyacetate 107-72-2,  
Amyltrichlorosilane 107-81-3, 2-Bromopentane 107-82-4,  
1-Bromo-3-methylbutane 107-87-9, Methyl propyl ketone  
107-89-1, Aldol 107-92-6, Butyric acid, miscellaneous  
108-01-0, Dimethylethanolamine 108-05-4, Acetic acid ethenyl  
ester, miscellaneous 108-09-8, 1,3-Dimethylbutylamine  
108-10-1, Methyl isobutyl ketone 108-11-2, Methyl isobutyl  
carbinol 108-18-9, Diisopropylamine 108-20-3, Diisopropyl  
ether 108-21-4, Isopropyl acetate 108-22-5, Isopropenyl  
acetate 108-23-6, Isopropyl chloroformate 108-24-7, Acetic  
anhydride 108-31-6, 2,5-Furandione, miscellaneous 108-39-4,  
miscellaneous 108-45-2, m-Phenylenediamine, miscellaneous  
108-46-3, Resorcinol, miscellaneous 108-67-8, miscellaneous  
108-77-0 108-83-8, Diisobutyl ketone 108-84-9 108-86-1,  
Benzene, bromo-, miscellaneous 108-87-2, Methyl cyclohexane  
108-88-3, Toluene, miscellaneous 108-90-7, Chlorobenzene,  
miscellaneous 108-91-8, Cyclohexylamine, miscellaneous  
108-94-1, Cyclohexanone, miscellaneous 108-95-2, Phenol,  
miscellaneous 108-98-5, Phenyl mercaptan, miscellaneous  
109-02-4 109-09-1, 2-Chloropyridine 109-13-7, tert-Butyl  
peroxyisobutyrate 109-52-4, Valeric acid, miscellaneous

109-53-5, Vinyl isobutyl ether 109-60-4, n-Propyl acetate  
109-61-5, n-Propyl chloroformate 109-63-7, Boron trifluoride  
diethyl etherate 109-65-9, n-Butyl bromide 109-66-0, Pentane,  
miscellaneous 109-70-6, 1-Chloro-3-bromopropane 109-73-9,  
n-Butylamine, miscellaneous 109-74-0, Butyronitrile 109-77-3,  
Malononitrile 109-79-5, Butyl mercaptan 109-86-4, Ethylene  
glycol monomethyl ether 109-87-5, Methylal 109-89-7,  
Diethylamine, miscellaneous 109-90-0, Ethyl isocyanate  
109-92-2, Vinyl ethyl ether 109-93-3, Divinyl ether 109-94-4,  
Ethyl formate 109-95-5, Ethyl nitrite 109-99-9,  
Tetrahydrofuran, miscellaneous 110-00-9, Furan 110-01-0,  
Tetrahydrothiophene 110-02-1, Thiophene 110-12-3,  
5-Methylhexan-2-one 110-16-7, Maleic acid, miscellaneous  
110-18-9 110-19-0 110-22-5, Diacetyl peroxide 110-43-0, Amyl  
methyl ketone 110-49-6 110-54-3, Hexane, miscellaneous  
110-58-7, Amylamine 110-62-3, Valeraldehyde 110-66-7, Amyl  
mercaptan 110-68-9, N-Methylbutylamine 110-69-0, Butyraldoxime  
110-71-4, 1,2-Dimethoxyethane 110-74-7, Propyl formate  
110-78-1, n-Propyl isocyanate 110-80-5, Ethylene glycol  
monoethyl ether 110-82-7, Cyclohexane, miscellaneous 110-83-8,  
Cyclohexene, miscellaneous 110-85-0, Piperazine, miscellaneous  
110-86-1, Pyridine, miscellaneous 110-87-2 110-89-4,  
Piperidine, miscellaneous 110-91-8, Morpholine, miscellaneous  
110-96-3, Diisobutylamine 111-15-9, Ethylene glycol monoethyl  
ether acetate 111-34-2, Butylvinyl ether 111-36-4, n-Butyl  
isocyanate 111-40-0 111-43-3, Dipropyl ether 111-49-9,  
Hexamethylenimine 111-65-9, Octane, miscellaneous 111-69-3,  
Adiponitrile 111-71-7, n-Heptaldehyde 111-76-2, Ethylene  
glycol monobutyl ether 111-92-2, Di-n-butylamine 112-04-9  
112-24-3, Triethylenetetramine 112-57-2 115-07-1, Propylene,  
miscellaneous 115-10-6, Dimethyl ether 115-11-7, Isobutylene,  
miscellaneous 115-21-9, Ethyltrichlorosilane 115-25-3,  
Octafluorocyclobutane 116-14-3, Tetrafluoroethylene,  
miscellaneous 116-15-4, Hexafluoropropylene 116-16-5,  
Hexachloroacetone 116-54-1, Methyl dichloroacetate 118-74-1,  
Hexachlorobenzene 118-96-7, Trinitrotoluene 120-92-3,  
Cyclopentanone 121-43-7, Trimethyl borate 121-44-8,  
Triethylamine, miscellaneous 121-45-9, Trimethyl phosphite  
121-46-0, 2,5-Norbornadiene 121-69-7, N,N-Dimethylaniline,  
miscellaneous 121-73-3 121-82-4, Cyclotrimethylenetrinitramine  
122-51-0, Ethyl orthoformate 122-52-1, Triethyl phosphite  
123-00-2, 4-Morpholinepropanamine 123-15-9 123-19-3,  
Dipropylketone 123-20-6, Vinyl butyrate 123-23-9, Succinic  
acid peroxide 123-30-8, p-Aminophenol 123-31-9, Hydroquinone,  
miscellaneous 123-38-6, Propionaldehyde, miscellaneous  
123-42-2, Diacetone alcohol 123-54-6, 2,4-Pentanedione,  
miscellaneous 123-62-6, Propionic anhydride 123-63-7,  
Paraldehyde 123-72-8, Butyraldehyde 123-75-1, Pyrrolidine,  
miscellaneous 123-86-4, Butyl acetate 123-91-1, Dioxane,  
miscellaneous 124-02-7, Diallylamine 124-09-4,  
Hexamethylenediamine, miscellaneous 124-13-0, Octyl aldehyde  
124-18-5, n-Decane 124-38-9, Carbon dioxide, miscellaneous  
124-40-3, Dimethylamine, miscellaneous 124-41-4, Sodium  
methylate 124-43-6 124-47-0, Urea nitrate 124-65-2, Sodium  
cacodylate 126-98-7, Methacrylonitrile 126-99-8, Chloroprene  
127-18-4, Tetrachloroethylene, miscellaneous 127-85-5, Sodium  
arsanilate 129-79-3 131-52-2, Sodium pentachlorophenate  
131-73-7, Hexanitrodiphenylamine 131-74-8, Ammonium picrate  
133-14-2 133-55-1, N,N'-Dinitroso-N,N'-dimethyl terephthalamide  
134-32-7,  $\alpha$ -Naphthylamine 138-86-3, Dipentene 138-89-6

139-02-6, Sodium phenolate 140-29-4, Phenylacetonitrile  
140-31-8, 1-Piperazineethanamine 140-80-7 140-88-5 141-32-2  
(packaging and transport of, stds. for)  
IT 1303-33-9D, Arsenic sulfide, mixture with chlorates 1304-28-5,  
Barium oxide, miscellaneous 1304-29-6, Barium peroxide  
1305-78-8, Calcium oxide, miscellaneous 1305-79-9, Calcium  
peroxide 1305-99-3, Calcium phosphide 1309-60-0, Lead dioxide  
1310-58-3, Potassium hydroxide, miscellaneous 1310-65-2, Lithium  
hydroxide 1310-73-2, Sodium hydroxide, miscellaneous  
1310-82-3, Rubidium hydroxide 1312-73-8, Potassium sulfide  
1313-60-6, Sodium peroxide 1313-82-2, Sodium sulfide,  
miscellaneous 1314-18-7, Strontium peroxide 1314-22-3, Zinc  
peroxide 1314-24-5, Phosphorus trioxide 1314-34-7, Vanadium  
trioxide 1314-56-3, Phosphorus pentoxide, miscellaneous  
1314-62-1, Vanadium pentoxide, miscellaneous 1314-80-3,  
Phosphorus sulfide (P2S5) 1314-84-7, Zinc phosphide 1314-85-8,  
Phosphorus sesquisulfide 1319-77-3, Cresylic acid 1320-37-2,  
Dichlorotetrafluoroethane 1321-10-4, Chlorocresol 1321-31-9,  
Phenetidine 1327-53-3, Arsenic trioxide 1330-20-7, Xylene,  
miscellaneous 1330-45-6, Chlorotrifluoroethane 1330-78-5,  
Tricresyl phosphate 1331-22-2, Methyl cyclohexanone 1332-12-3,  
Fulminating gold 1332-37-2, Iron oxide, properties 1333-39-7,  
Phenolsulfonic acid 1333-41-1, Picoline 1333-74-0, Hydrogen,  
miscellaneous 1333-82-0, Chromium trioxide 1333-83-1, Sodium  
hydrogen fluoride 1335-26-8, Magnesium peroxide 1335-31-5,  
Mercury oxycyanide 1335-85-9, Dinitro-o-cresol 1336-21-6,  
Ammonium hydroxide 1337-81-1 1338-23-4, Methyl ethyl ketone  
peroxide 1341-24-8, Chloroacetophenone 1341-49-7, Ammonium  
hydrogen fluoride 1344-40-7, Lead phosphite, dibasic  
1344-67-8, Copper chloride 1498-40-4, Ethyl phosphorous  
dichloride 1498-51-7, Ethyl phosphorodichloride 1569-69-3,  
Cyclohexyl mercaptan 1609-86-5, tert-Butyl isocyanate  
1623-15-0 1623-24-1, Isopropyl acid phosphate 1634-04-4,  
Methyl-tert-butyl ether 1693-71-6, Triallyl borate 1705-60-8,  
2,2-Di(4,4-di-tert-butylperoxycyclohexyl)propane 1712-64-7,  
Isopropyl nitrate 1719-53-5, Diethyldichlorosilane 1737-93-5,  
3,5-Dichloro-2,4,6-trifluoropyridine 1789-58-8,  
Ethyldichlorosilane 1795-48-8, Isopropyl isocyanate 1838-59-1,  
Allyl formate 1873-29-6, Isobutyl isocyanate 1885-14-9,  
Phenylchloroformate 1947-27-9, Arsenic trichloride 2050-92-2,  
Di-n-amylamine 2094-98-6, 1,1'-Azodi(hexahydrobenzonitrile)  
2144-45-8, Dibenzyl peroxydicarbonate 2155-71-7 2167-23-9,  
2,2-Di(tert-butylperoxy)butane 2217-06-3, Dipicryl sulfide  
2243-94-9, 1,3,5-Trinitronaphthalene 2244-21-5, Potassium  
dichloroisocyanurate 2294-47-5, p-Diazidobenzene 2312-76-7  
2338-12-7, 5-Nitrobenzotriazole 2487-90-3, Trimethoxysilane  
2508-19-2, Trinitrobenzenesulfonic acid 2524-03-0, Dimethyl  
chlorothiophosphate 2524-04-1, Diethylthiophosphoryl chloride  
2549-51-1, Vinyl chloroacetate 2551-62-4, Sulfur hexafluoride  
2567-83-1, Tetraethylammonium perchlorate 2657-00-3, Sodium  
2-diazo-1-naphthol-5-sulfonate 2691-41-0,  
Cyclotetramethylenetetraniitrmine 2696-92-6, Nitrosyl chloride  
2699-79-8, Sulfuryl fluoride 2782-57-2, Dichloroisocyanuric acid  
2782-57-2D, Dichloroisocyanuric acid, salts 2820-51-1, Nicotine  
hydrochloride 2825-15-2 2855-13-2, Isophoronediamine  
2867-47-2, Dimethylaminoethyl methacrylate 2893-78-9, Sodium  
dichloroisocyanurate 2937-50-0, Allyl chloroformate 2941-64-2,  
Ethyl chlorothioformate 2980-64-5 3025-88-5,  
2,5-Dimethyl-2,5-dihydroperoxy hexane 3031-74-1, Ethyl  
hydroperoxide 3032-55-1 3054-95-3, 3,3-Diethoxypropene

3087-37-4, Tetrapropylorthotitanate 3129-90-6, Isothiocyanic acid 3129-91-7, Dicyclohexylammonium nitrite 3132-64-7, Epibromohydrin 3165-93-3, 4-Chloro-o-toluidine hydrochloride 3173-53-3, Cyclohexyl isocyanate 3179-56-4, Acetyl cyclohexanesulfonyl peroxide 3188-13-4, Chloromethyl ethyl ether 3248-28-0, Dipropionyl peroxide **3268-49-3** 3275-73-8, Nicotine tartrate 3282-30-2, Trimethylacetyl chloride 3497-00-5, Phenyl phosphorus thiodichloride 3689-24-5 3724-65-0, Crotonic acid 3811-04-9, Potassium chlorate 3926-62-3, Sodium chloroacetate 3982-91-0, Thiophosphoryl chloride 4016-11-9, 1,2-Epoxy-3-ethoxypropane 4098-71-9 4109-96-0, Dichlorosilane 4170-30-3, Crotonaldehyde 4300-97-4 4316-42-1, N-n-Butylimidazole 4419-11-8, 2,2'-Azodi(2,4-dimethylvaleronitrile) 4421-50-5 4435-53-4, Butoxyl 4452-58-8, Sodium percarbonate 4472-06-4, Carbonazidodithioic acid 4484-72-4, Dodecyltrichlorosilane 4528-34-1 4547-70-0 4591-46-2 4682-03-5, Diazodinitrophenol 4795-29-3, Tetrahydrofurfurylamine 4904-61-4, 1,5,9-Cyclododecatriene 5283-66-9, Octyltrichlorosilane 5283-67-0, Nonyltrichlorosilane 5329-14-6, Sulfamic acid 5419-55-6, Triisopropyl borate 5610-59-3, Silver fulminate 5637-83-2, Cyanuric triazide 5653-21-4 5894-60-0, Hexadecyltrichlorosilane 5970-32-1, Mercury salicylate 6023-29-6 6275-02-1 6423-43-4 6427-21-0, Methoxymethyl isocyanate 6484-52-2, Nitric acid ammonium salt, properties 6484-52-2D, Ammonium nitrate, mixts. with fuel oils 6505-86-8, Nicotine sulfate 6659-60-5, 1,2,4-Butanetriol trinitrate 6842-15-5, Propylene tetramer 6867-30-7, Lithium acetylidy ethylenediamine complex 7304-92-9 7332-16-3, Inositol hexanitrate 7429-90-5, Aluminum, miscellaneous 7429-90-5D, Aluminum, alkyl derivs. 7439-90-9, Krypton, miscellaneous 7439-92-1D, Lead, compds. 7439-93-2, Lithium, miscellaneous 7439-93-2D, Lithium, alkyl derivs. 7439-95-4, Magnesium, miscellaneous 7439-95-4D, Magnesium, alkyl derivs. 7439-97-6, Mercury, miscellaneous 7439-97-6D, Mercury, compds. 7440-01-9, Neon, miscellaneous 7440-09-7, Potassium, miscellaneous 7440-17-7, Rubidium, miscellaneous 7440-21-3, Silicon, miscellaneous 7440-23-5, Sodium, miscellaneous 7440-28-0D, Thallium, compds. 7440-29-1, Thorium, miscellaneous 7440-31-5D, Tin, organic compds. 7440-32-6, Titanium, properties 7440-36-0, Antimony, miscellaneous 7440-36-0D, Antimony, inorg. and organic compds. 7440-37-1, Argon, miscellaneous 7440-38-2, Arsenic, miscellaneous 7440-39-3, Barium, miscellaneous 7440-39-3D, Barium, alloys 7440-39-3D, Barium, compds. 7440-41-7, Beryllium, miscellaneous 7440-41-7D, Beryllium, compds. 7440-43-9D, Cadmium, compds. 7440-44-0, Carbon, miscellaneous 7440-45-1, Cerium, miscellaneous 7440-46-2, Cesium, miscellaneous 7440-55-3, Gallium, miscellaneous 7440-58-6, Hafnium, miscellaneous 7440-59-7, Helium, miscellaneous 7440-61-1, Uranium, miscellaneous 7440-63-3, Xenon, miscellaneous 7440-66-6, Zinc, miscellaneous 7440-67-7, Zirconium, miscellaneous 7440-70-2, Calcium, miscellaneous 7440-70-2D, Calcium, alloys 7446-09-5, Sulfur dioxide, miscellaneous 7446-11-9, Sulfur trioxide, miscellaneous 7446-14-2, Lead sulfate 7446-18-6, Thallium sulfate 7446-70-0, Aluminum chloride (AlCl<sub>3</sub>), miscellaneous 7487-94-7, Mercuric chloride, miscellaneous 7488-56-4, Selenium disulfide 7521-80-4, Butyltrichlorosilane 7550-45-0, Titanium tetrachloride, miscellaneous 7570-26-5, 1,2-Dinitroethane 7572-29-4, Dichloroacetylene 7578-36-1 7580-67-8, Lithium hydride 7601-89-0, Sodium perchlorate 7601-90-3, Perchloric

acid, miscellaneous 7616-94-6, Perchloryl fluoride 7631-89-2,  
 Sodium arsenate 7631-99-4, Sodium nitrate, miscellaneous  
 7632-00-0, Sodium nitrite 7632-51-1, Vanadium tetrachloride  
 7637-07-2, Boron trifluoride, miscellaneous 7645-25-2, Lead  
 arsenate 7646-69-7, Sodium hydride 7646-78-8, Stannic  
 chloride, miscellaneous 7646-85-7, Zinc chloride, miscellaneous  
 7646-93-7, Potassium hydrogen sulfate 7647-01-0, Hydrogen  
 chloride, miscellaneous 7647-18-9, Antimony pentachloride  
 7647-19-0, Phosphorus pentafluoride 7664-38-2, Phosphoric acid,  
 miscellaneous 7664-38-2D, Phosphoric acid, esters 7664-39-3,  
 Hydrogen fluoride, miscellaneous 7664-41-7, Ammonia,  
 miscellaneous 7664-93-9, Sulfuric acid, miscellaneous  
 7681-38-1, Sodium hydrogen sulfate 7681-49-4, Sodium fluoride,  
 miscellaneous 7681-52-9, Sodium hypochlorite 7697-37-2, Nitric  
 acid, miscellaneous 7704-34-9, Sulfur, miscellaneous  
 (packaging and transport of, stds. for)

L29 ANSWER 19 OF 35 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1990:630786 HCAPLUS Full-text

DOCUMENT NUMBER: 113:230786

TITLE: Photochemical preparation of  
 3-(organothio)aldehydes from a mercaptan and  
 $\alpha,\beta$ -unsaturated aliphatic aldehydes

INVENTOR(S): Sandler, Stanley R.

PATENT ASSIGNEE(S): Pennwalt Corp., USA

SOURCE: U.S., 3 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4944853	A	19900731	US 1989-405784	1989 0911
IN 173789	A	19940716	IN 1990-CA292	1990 0409
JP 03184952	A2	19910812	JP 1990-94184	1990 0411
EP 417386	A1	19910320	EP 1990-107565	1990 0420
R: BE, CH, DE, DK, ES, FR, GB, IT, LI, NL, SE AU 9053784	A1	19910411	AU 1990-53784	1990 0423
AU 631202	B2	19921119		
BR 9001870	A	19911112	BR 1990-1870	1990 0423

PRIORITY APPLN. INFO.:

<--  
US 1989-405784

A

1989  
0911

<--

OTHER SOURCE(S): CASREACT 113:230786; MARPAT 113:230786

AB 3-(Organothio)aldehydes R1CH(SR2)CH<sub>2</sub>CHO (I; R1 = H, C1-7 alkyl; R2 = C1-12 alkyl, C5-6 cycloalkyl, C6-12 aryl or alkaryl), useful as intermediates for the preparation of pesticides and antioxidants and as odorant or flavoring agents, are prepared by reaction of a mercaptan with substantially equimolar amount of  $\alpha$ , $\beta$ -unsatd. aliphatic aldehyde at .aprx.2°-60° in the absence of O-containing gas. Thus, a solution of 3.0 mol EtSH and 3.0 mol crotonaldehyde was cooled to 2-20° and was photolyzed in a 500 mL borosilicate reactor under the irradiation with a 450 W Hanovia high-pressure Hg lamp, while a slow stream of N was passed into the reactor. I (R1 = Me, R2 = Et) was obtained in 55.2% yield.

IT 74-93-1, Methyl mercaptan, reactions  
(photochem. addition of, with acrolein)  
RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C-SH

IT 3268-49-3P, 3-(Methylthio)propanal  
(preparation of, photochem. addition in)  
RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

MeS-CH<sub>2</sub>-CH<sub>2</sub>-CHO

IC ICM B01J019-08  
INCL 204157760  
CC 23-14 (Aliphatic Compounds)  
Section cross-reference(s): 5, 62  
IT 74-93-1, Methyl mercaptan, reactions  
(photochem. addition of, with acrolein)  
IT 3268-49-3P, 3-(Methylthio)propanal 27205-24-9P,  
3-(Ethylthio)butanal  
(preparation of, photochem. addition in)

L29 ANSWER 20 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1985:505316 HCPLUS Full-text  
DOCUMENT NUMBER: 103:105316  
TITLE: Methionine hydroxy analog or its derivative  
and esters and 1-acyloxy-3-  
hydrocarbylthiopropenes and products resulting  
from their synthesis  
INVENTOR(S): Burrington, James David; Cesa, Mark Clark  
PATENT ASSIGNEE(S): Standard Oil Co., USA  
SOURCE: Eur. Pat. Appl., 30 pp.  
CODEN: EPXXDW

DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

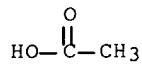
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 133796	A1	19850306	EP 1984-305228	1984 0801
EP 133796	B1	19870304		<--
R: BE, CH, DE, FR, GB, IT, LI, NL				
US 4782173	A	19881101	US 1983-520042	1983 0803
CA 1251463	A1	19890321	CA 1984-460202	1984 0802
JP 60100553	A2	19850604	JP 1984-163748	1984 0803
BR 8403914	A	19850709	BR 1984-3914	1984 0803
CA 1275111	A2	19901009	CA 1988-559288	1988 0218
PRIORITY APPLN. INFO.:			US 1983-520042	A 1983 0803
			CA 1984-460202	A3 1984 0802

AB Methionine hydroxy analog or derivs. RSCH<sub>2</sub>CH<sub>2</sub>CH(OH)CO<sub>2</sub>H (I, R = C<sub>1</sub>-30 hydrocarbyl) were prepared by treating RSCH<sub>2</sub>CH<sub>2</sub>CHO with R<sub>1</sub>COX (R<sub>1</sub> = H, C<sub>1</sub>-30 hydrocarbyl; X = R<sub>1</sub>CO<sub>2</sub>, F, Cl, Br, etc.), treating the resulting RSCH<sub>2</sub>CH:CHO<sub>2</sub>CR<sub>1</sub> with CO and R<sub>2</sub>YH (R<sub>2</sub> = H, C<sub>1</sub>-30 hydrocarbyl, Y = O; R<sub>2</sub> = C<sub>1</sub>-30 hydrocarbyl, Y = S), and hydrolyzing the resulting RSCH<sub>2</sub>CH<sub>2</sub>CH(O<sub>2</sub>CR<sub>1</sub>)CO<sub>2</sub>R<sub>2</sub>. Thus, MeSCH<sub>2</sub>CH<sub>2</sub>CHO was treated with Ac<sub>2</sub>O in the presence of KOAc at 145° for 3 h to give MeSCH<sub>2</sub>CH:CHOAc as a 43:57 Z/E mixture. The latter mixture was treated with MeOH and CO in the presence of (Ph<sub>3</sub>P)<sub>2</sub>PdCl<sub>2</sub> catalyst in a stainless steel bomb at 100° for 92.5 h to give 28.6% MeSCH<sub>2</sub>CH<sub>2</sub>CH(OAc)CO<sub>2</sub>Me (II) and 19.5% MeSCH<sub>2</sub>CH<sub>2</sub>CH(OAc)CSOMe. II was hydrolyzed by 2N HCl at 50° for 4 h to give 92% I (R = Me).

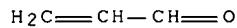
IT 64-19-7, uses and miscellaneous  
(catalyst, for reaction of (methylthio)propionaldehyde with acetic anhydride)

RN 64-19-7 HCPLUS

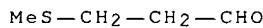
CN Acetic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IT 107-02-8P, preparation  
(formation of, from reaction of acetoxy(methylthio)propene with  
alcs. and carbon monoxide in absence of catalyst)  
RN 107-02-8 HCPLUS  
CN 2-Propenal (9CI) (CA INDEX NAME)



IT 3268-49-3  
(reaction of, with acetic anhydride)  
RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IC ICM C07C149-20  
CC 34-2 (Amino Acids, Peptides, and Proteins)  
Section cross-reference(s): 23  
IT 64-19-7, uses and miscellaneous 110-86-1, uses and  
miscellaneous 121-44-8, uses and miscellaneous 127-08-2  
532-32-1 563-67-7 603-35-0, uses and miscellaneous  
1310-58-3, uses and miscellaneous 53189-26-7  
(catalyst, for reaction of (methylthio)propionaldehyde with  
acetic anhydride)  
IT 79-20-9P 107-02-8P, preparation  
(formation of, from reaction of acetoxy(methylthio)propene with  
alcs. and carbon monoxide in absence of catalyst)  
IT 3268-49-3  
(reaction of, with acetic anhydride)

L29 ANSWER 21 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1985:487504 HCPLUS Full-text  
DOCUMENT NUMBER: 103:87504  
TITLE: Continuous preparation of  $\beta$ -  
methylmercaptopropionaldehyde  
INVENTOR(S): Pavlovschi, Ana Maria; Levinta, Lucia; Gross,  
Gernot Holger  
PATENT ASSIGNEE(S): Combinatul Petrochimic, Pitesti, Rom.  
SOURCE: Rom., 2 pp.  
CODEN: RUXXA3  
DOCUMENT TYPE: Patent  
LANGUAGE: Romanian  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
RO 85095	B	19840924	RO 1982-106977	1982 0322
<--				
PRIORITY APPLN. INFO.:		RO 1982-106977		
1982 0322				
<--				
AB	The addition reaction of CH <sub>2</sub> :CHCHO with MeSH at atmospheric pressure at 30-45° gave MeSCH <sub>2</sub> CH <sub>2</sub> CHO in high yields.			
IT	74-93-1, reactions (addition of, with acrolein)			
RN	74-93-1 HCPLUS			
CN	Methanethiol (8CI, 9CI) (CA INDEX NAME)			

H<sub>3</sub>C-SH

IT	<b>3268-49-3P</b> (preparation of)
RN	3268-49-3 HCPLUS
CN	Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

MeS-CH<sub>2</sub>-CH<sub>2</sub>-CHO

IC	ICM C07C151-00
CC	23-14 ( <b>Aliphatic</b> Compounds)
IT	74-93-1, reactions (addition of, with acrolein)
IT	<b>3268-49-3P</b> (preparation of)

L29 ANSWER 22 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1981:191700 HCPLUS Full-text

DOCUMENT NUMBER: 94:191700  
TITLE: Direct preparation of β-methylthiopropionaldehyde  
INVENTOR(S): Komorn, Yves; Schwachhofer, Ghislain  
PATENT ASSIGNEE(S): Rhone-Poulenc Industries S. A., Fr.  
SOURCE: Eur. Pat. Appl., 13 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: French  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----

EP 22697	A1	19810121	EP 1980-400951	
				1980 0625
<--				
EP 22697	B1	19811230		
R: BE, CH, DE, FR, GB, IT, NL, SE				
FR 2460925	A1	19810130	FR 1979-17827	
				1979 0710
<--				
FR 2460925	B1	19810814		
US 4319047	A	19820309	US 1980-164539	
				1980 0702
<--				
BR 8004260	A	19810127	BR 1980-4260	
				1980 0709
<--				
ES 493224	A1	19810416	ES 1980-493224	
				1980 0709
<--				
CA 1138896	A1	19830104	CA 1980-355801	
				1980 0709
<--				
SU 1318153	A3	19870615	SU 1980-2948390	
				1980 0709
<--				
JP 56053648	A2	19810513	JP 1980-93336	
				1980 0710
<--				
JP 57008098	B4	19820215		
PRIORITY APPLN. INFO.:			FR 1979-17827	A
				1979 0710
<--				

AB Acrolein, prepared by air oxidation of propylene, was purified and treated with MeSH to yield MeSCH<sub>2</sub>CH<sub>2</sub>CHO in an apparatus which is described. The acrylic acid impurity was removed from the acrolein by countercurrent washing in water or solvent; the water was removed by condensation and the condensate was partially vaporized to recover acrolein.

IT 74-93-1, reactions  
(addition reaction of, with acrolein)

RN 74-93-1 HCPLUS

CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C-SH

IT 3268-49-3P  
(preparation of)

RN 3268-49-3 HCPLUS

CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

MeS—CH<sub>2</sub>—CH<sub>2</sub>—CHO

IC C07C149-14  
CC 23-14 (**Aliphatic** Compounds)  
IT **74-93-1**, reactions  
    (addition reaction of, with acrolein)  
IT **3268-49-3P**  
    (preparation of)

L29 ANSWER 23 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1978:109868 HCPLUS Full-text  
DOCUMENT NUMBER: 88:109868  
TITLE: Illness with temporary work disability in  
workers engaged in acrolein and  
methylmercaptopropionaldehyde (MMP) production  
AUTHOR(S): Kantemirova, A. E.  
CORPORATE SOURCE: USSR  
SOURCE: Trudy Volgogradskogo Gosudarstvennogo  
Meditinskogo Instituta (1975),  
26(4), 79-85  
CODEN: TVLMB8; ISSN: 0376-141X  
DOCUMENT TYPE: Journal  
LANGUAGE: Russian  
AB Workers in the title industry are exposed to the action of the following air  
pollutants: methylmercaptan [74-93-1] 0.003-5.6, MMP [3268-49-3] 0.1-6.0,  
HCHO [50-00-0] 0.05-8.1, MeCHO [75-07-0] 0.48-22, and acrolein [107-02-8]  
0.1-8.2 mg/m<sup>3</sup>. Catarrhal diseases are the most frequent and the highest sick  
rate is observed among women working for <1 or >7 y.  
IT **74-93-1**, biological studies  
    (health hazards of, in acrolein and  
    methylmercaptopropionaldehyde manufacture)  
RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C—SH

IT **3268-49-3P**  
    (manufacture of, health hazards of)  
RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

MeS—CH<sub>2</sub>—CH<sub>2</sub>—CHO

CC 59-3 (Air Pollution and Industrial Hygiene)  
Section cross-reference(s): 23  
IT 50-00-0, biological studies **74-93-1**, biological studies  
75-07-0, biological studies

(health hazards of, in acrolein and  
methylmercaptopropionaldehyde manufacture)

IT 107-02-8P, preparation 3268-49-3P  
(manufacture of, health hazards of)

L29 ANSWER 24 OF 35 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1977:120784 HCAPLUS Full-text

DOCUMENT NUMBER: 86:120784

TITLE:  $\beta$ -Methylthiopropionaldehyde

INVENTOR(S): Biola, Georges; Komorn, Yves; Limongi, Eric

PATENT ASSIGNEE(S): Rhone-Poulenc S. A., Fr.

SOURCE: Ger. Offen., 12 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2627430	A1	19761223	DE 1976-2627430	1976 0618
			<--	
DE 2627430	B2	19770721		
DE 2627430	C3	19850110		
FR 2314917	A1	19770114	FR 1975-20183	1975 0620
			<--	
SU 691086	D	19791005	SU 1976-2370202	1976 0615
			<--	
US 4225516	A	19800930	US 1976-696432	1976 0615
			<--	
JP 52003013	A2	19770111	JP 1976-70901	1976 0616
			<--	
JP 57000317	B4	19820106		
ES 448918	A1	19770701	ES 1976-448918	1976 0616
			<--	
BE 843077	A1	19761217	BE 1976-168033	1976 0617
			<--	
NL 7606580	A	19761222	NL 1976-6580	1976 0617
			<--	
NL 184517	B	19890316		
NL 184517	C	19890816		
SE 7607035	A	19761221	SE 1976-7035	1976

&lt;--

SE 431089 B 19840116  
 SE 431089 C 19840426  
 BR 7603949 A 19770322 BR 1976-3949

1976  
0618

CH 610882 A 19790515 CH 1976-7831

1976  
0618

CA 1069536 A1 19800108 CA 1976-255246

1976  
0618

PRIORITY APPLN. INFO.: FR 1975-20183

A

1975  
0620

&lt;--

AB The waste gas from acrolein (I) synthesis containing .apprx.5% I was freed from H<sub>2</sub>C:CHCO<sub>2</sub>H and H<sub>2</sub>O and dissolved in MeSCH<sub>2</sub>CH<sub>2</sub>CHO (II), then treated with MeSH at .apprx.30° to give MeSCH<sub>2</sub>CH<sub>2</sub>C(SMe)OH, which was maintained at .apprx.0.15% in the solution. The combined yield of II was 99%.

IT **3268-49-3P**

(preparation of)

RN 3268-49-3 HCPLUS

CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

MeS—CH<sub>2</sub>—CH<sub>2</sub>—CHO

IT **74-93-1, reactions**  
 (reaction of, with acrolein)

RN 74-93-1 HCPLUS

CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C—SH

IC C07C149-14  
 CC 23-14 (**Aliphatic** Compounds)  
 IT **3268-49-3P**  
 (preparation of)  
 IT **74-93-1, reactions**  
 (reaction of, with acrolein)

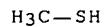
L29 ANSWER 25 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1976:576769 HCPLUS Full-text

DOCUMENT NUMBER: 85:176769

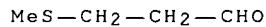
TITLE: Development of a continuous method for  
 preparation of 3-(methylthio)propionaldehyde  
 Zvegintseva, G. B.; Medvedev, A. I.; Reimer,  
 M. I.; Dyadchenko, M. A.

AUTHOR(S):

CORPORATE SOURCE: Nauchno-Issled. Inst. Khim. Polim. Mater.,  
SOURCE: Tambov, USSR  
Tezisy Dokl. Nauchn. Sess. Khim. Tekhnol. Org.  
Soedin. Sery Sernistykh Neftei, 13th (1974), 343. Editor(s): Gal'pern, G.  
D. "Zinatne": Riga, USSR.  
CODEN: 33SUAA  
DOCUMENT TYPE: Conference  
LANGUAGE: Russian  
AB A math. model was used to optimize a continuous process for MeSCH2CH2CHO (I) synthesis by reacting MeSH with acrolein (II); I was saturated with MeSH, and the resulting solution was treated with II in the presence of Et3N.  
IT **74-93-1**  
(addition reaction of, with acrolein, (methylthio)propionaldehyde by, catalysis, simulation, and optimization of)  
RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



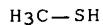
IT **3268-49-3P**  
(by addition reaction of methanethiol with acrolein, catalysis, simulation, and optimization of)  
RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



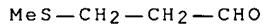
CC 23-14 (**Aliphatic** Compounds)  
IT **74-93-1**  
(addition reaction of, with acrolein, (methylthio)propionaldehyde by, catalysis, simulation, and optimization of)  
IT **3268-49-3P**  
(by addition reaction of methanethiol with acrolein, catalysis, simulation, and optimization of)

L29 ANSWER 26 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1976:523278 HCPLUS Full-text  
DOCUMENT NUMBER: 85:123278  
TITLE: Peroxide initiation of the reaction of mercaptans with unsaturated compounds  
AUTHOR(S): Rykov, B. K.; Sizov, S. Yu.; Sukhanov, S. V.  
CORPORATE SOURCE: Volzh. Zavod. Org. Sint., Volzhsk, USSR  
SOURCE: Tezisy Dokl. Nauchn. Sess. Khim. Tekhnol. Org.  
Soedin. Sery Sernistykh Neftei, 13th (1974), 343. Editor(s): Gal'pern, G.  
D. "Zinatne": Riga, USSR.  
CODEN: 33SUAA  
DOCUMENT TYPE: Conference  
LANGUAGE: Russian

AB RSH (R = lower alkyl, e.g., Me) addition to unsatd. compds. (e.g., acrolein) to give the corresponding sulfides (e.g., MeSCH<sub>2</sub>CH<sub>2</sub>CHO) was initiated by organic peroxides;  $\alpha$ -haloacyl peroxides were recommended.  
IT 74-93-1  
(addition reaction with acrolein, initiator for)  
RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



IT 3268-49-3P  
(preparation of)  
RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



CC 23-9 (Aliphatic Compounds)  
IT 74-93-1  
(addition reaction with acrolein, initiator for)  
IT 3268-49-3P  
(preparation of)

L29 ANSWER 27 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1975:409198 HCPLUS Full-text  
DOCUMENT NUMBER: 83:9198  
TITLE: S-Substituted mercaptopropionaldehyde  
INVENTOR(S): Ito, Hiroo; Kimura, Kaoru; Yamada, Akira  
PATENT ASSIGNEE(S): Toa Gosei Chemical Industry Co., Ltd.  
SOURCE: Jpn. Tokkyo Koho, 3 pp.  
CODEN: JAXXAD  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 49024045	B4	19740620	JP 1970-43681	1970 0523
<--				
PRIORITY APPLN. INFO.:	JP 1970-43681			
	1970 0523			
<--				
AB Cr(OAc) <sub>3</sub> .H <sub>2</sub> O and n-dodecylmercaptan were kept 1 hr at 30° with acrolein, containing a polymerization inhibitor (e.g. hydroquinone), to give 82.1% $\beta$ -n-dodecylthiopropionaldehyde. The reaction of RSH (R = Me, Et, Bu, Ph) with				

RCH:CR1CHO (R = H, R1 = H, Me; R = Me, R1 = H) and inorg. Cr salts were also discussed.  
IT 74-93-1  
    (addition reaction with acrolein)  
RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

$$\text{H}_3\text{C}-\text{SH}$$

IT **3268-49-3P**  
(preparation of)  
RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

$$\text{MeS}-\text{CH}_2-\text{CH}_2-\text{CHO}$$

IC C07C; B01J  
 CC 23-14 (Aliphatic Compounds)  
 IT 74-93-1 75-08-1 108-98-5 109-79-5 112-55-0  
     (addition reaction with acrolein)  
 IT 3268-49-3P 19378-51-9P 27098-65-3P 38160-52-0P  
     38160-57-5P 55154-14-8P  
     (preparation of)

L29 ANSWER 28 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1975:409197 HCPLUS Full-text  
DOCUMENT NUMBER: 83:9197  
TITLE:  $\beta$ -Methylthiopropionaldehyde and its alkyl derivatives  
INVENTOR(S): Ohuchi, Shunji; Shibuya, Kazumasa  
PATENT ASSIGNEE(S): Asahi Chemical Industry Co., Ltd.  
SOURCE: Jpn. Tokkyo Koho, 3 pp.  
CODEN: JAXXAD  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
JP 49024046	B4	19740620	JP 1970-78498	1970 0909
-----	-----	-----	-----	-----
PRIORITY APPLN. INFO.:			JP 1970-78498	1970 0909
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----

AB MeSH was added to RCH:CR1COR2 (R, R1, R2 = H, alkyl) in EtOH containing  $\beta$ -PhNHC10H7, NH4O2CNH2, NH4HCO3, (NH4)2CO3, NH4Cl-NaHCO3, or NH3-CO2 at 10-20° to give  $\leq$ 90% MeSCHRCHR1COR2.

IT 74-93-1  
 (addition reaction of, with acrolein, catalyst for)

RN 74-93-1 HCPLUS

CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C—SH

IT 3268-49-3P  
 (by addition reaction of methylmercaptan with acrolein, catalyst for)

RN 3268-49-3 HCPLUS

CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

Mes—CH<sub>2</sub>—CH<sub>2</sub>—CHO

IC C07C; B01J  
 CC 23-14 (Aliphatic Compounds)

IT 74-93-1  
 (addition reaction of, with acrolein, catalyst for)

IT 3268-49-3P  
 (by addition reaction of methylmercaptan with acrolein, catalyst for)

L29 ANSWER 29 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1975:16324 HCPLUS Full-text  
 DOCUMENT NUMBER: 82:16324  
 TITLE:  $\beta$ -(Methylthio)propionaldehyde  
 INVENTOR(S): Sizov, S. Yu.; Sukhanov, S. V.; Rykov, V. K.;  
 Shustov, V. I.; Tsarenko, S. V.  
 PATENT ASSIGNEE(S): Volzhskii Plant of Organic Synthesis  
 SOURCE: U.S.S.R. From: Otkrytiya, Izobret., Prom.  
 Obraztsy, Tovarnye Znaki 1974, 51(34), 63.  
 CODEN: URXXAF

DOCUMENT TYPE: Patent  
 LANGUAGE: Russian  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	
-----				
SU 443029	T	19740915	SU 1972-1819472	1972 0810
			<--	
PRIORITY APPLN. INFO.:			SU 1972-1819472	A
				1972 0810

AB MeSCH<sub>2</sub>CH<sub>2</sub>CHO (I) was prepared by treating acrolein with MeSH in an organic solvent (e.g., I) in 1:1 I-MeSH ratio.  
IT 74-93-1  
(addition reaction with acrolein)  
RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C—SH

IT 3268-49-3P  
(preparation of)  
RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

MeS—CH<sub>2</sub>—CH<sub>2</sub>—CHO

IC C07C  
CC 23-14 (Aliphatic Compounds)  
IT 74-93-1  
(addition reaction with acrolein)  
IT 3268-49-3P  
(preparation of)

L29 ANSWER 30 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1975:16319 HCPLUS Full-text  
DOCUMENT NUMBER: 82:16319  
TITLE: 3-Methylmercaptopropionaldehyde  
INVENTOR(S): Koberstein, Edgar; Mueller, Klaus; Theissen, Ferdinand  
PATENT ASSIGNEE(S): Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler  
SOURCE: Ger., 3 pp.  
CODEN: GWXXAW  
DOCUMENT TYPE: Patent  
LANGUAGE: German  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2320544	B1	19740912	DE 1973-2320544	1973 0421
DE 2320544	C2	19750605		<--
US 4048232	A	19770913	US 1973-399127	1973 0920
SU 505357	D	19760228	SU 1974-1996514	<--

DD 110862	C	19750112	DD 1974-176862	1974 0218
				<--
ES 423736	A1	19760416	ES 1974-423736	1974 0228
				<--
GB 1400702	A	19750723	GB 1974-9296	1974 0301
				<--
NL 7404691	A	19741023	NL 1974-4691	1974 0405
				<--
BR 7402784	A0	19741105	BR 1974-2784	1974 0408
				<--
CH 582665	A	19761215	CH 1974-5019	1974 0410
				<--
RO 68025	P	19801230	RO 1974-78468	1974 0418
				<--
BE 813990	A1	19741021	BE 1974-6044553	1974 0419
				<--
FR 2226393	A1	19741115	FR 1974-13752	1974 0419
				<--
JP 50012012	A2	19750207	JP 1974-44369	1974 0419
				<--
AT 7403268	A	19751215	AT 1974-3268	1974 0419
				<--
AT 331773	B	19760825		
IT 1005995	A	19760930	IT 1974-50485	1974 0419
				<--
CA 1005460	A1	19770215	CA 1974-197828	1974 0419
				<--
SE 397344	B	19771031	SE 1974-5321	1974 0419
				<--

PRIORITY APPLN. INFO.:

DE 1973-2320544

A

1973  
0421

<--

AB CH<sub>2</sub>:CHCHO reacted with MeSH in the presence of hexamethylenetetramine catalyst to give 99.0-99.8% MeSCH<sub>2</sub>CH<sub>2</sub>CHO.

IT 74-93-1

(addition reaction of, with acrolein, catalysts for)

RN 74-93-1 HCPLUS

CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C—SH

IT 3268-49-3P

(preparation of)

RN 3268-49-3 HCPLUS

CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

MeS—CH<sub>2</sub>—CH<sub>2</sub>—CHO

IC C07C

CC 23-14 (Aliphatic Compounds)

IT 74-93-1

(addition reaction of, with acrolein, catalysts for)

IT 3268-49-3P

(preparation of)

L29 ANSWER 31 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1975:16318 HCPLUS Full-text

DOCUMENT NUMBER: 82:16318

TITLE:

β-Methylthiopropionaldehyde

INVENTOR(S):

Kojima, Takeshi; Horisawa, Toshiharu;  
Shimasaki, Masami; Ito, Ryoichi

PATENT ASSIGNEE(S):

Kanegafuchi Chemical Industry Co., Ltd.

SOURCE:

Jpn. Tokkyo Koho, 2 pp.

CODEN: JAXXAD

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
------------	------	------	-----------------	------

-----	----	-----	-----	-----
-----	-----	-----	-----	-----

JP 49024890	B4	19740626	JP 1970-82267	
-------------	----	----------	---------------	--

1970  
0919

<--

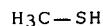
PRIORITY APPLN. INFO.:

JP 1970-82267

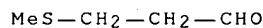
1970  
0919

<--

AB Amino acids catalyzed the addition of MeSH (I) to CH<sub>2</sub>:CHCHO (II). Thus, 56 g II were added to 48 g I containing 0.5 g methionine at <40° over 60 min to give 93.6 g MeSCH<sub>2</sub>CH<sub>2</sub>CHO.  
IT **74-93-1**  
(addition reaction with acrolein, catalysts for)  
RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



IT **3268-49-3P**  
(preparation of)  
RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IC C07C; B01J  
CC 23-14 (Aliphatic Compounds)  
IT **74-93-1**  
(addition reaction with acrolein, catalysts for)  
IT **3268-49-3P**  
(preparation of)

L29 ANSWER 32 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1975:16317 HCPLUS Full-text  
DOCUMENT NUMBER: 82:16317  
TITLE: S-Substituted mercaptopropionaldehyde  
INVENTOR(S): Ito, Hiroo; Kimura, Kaoru; Sato, Masakatsu;  
Yamada, Akira  
PATENT ASSIGNEE(S): Toa Gosei Chemical Industry Co., Ltd.  
SOURCE: Jpn. Tokkyo Koho, 3 pp.  
CODEN: JAXXAD  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
-----				
JP 49024454	B4	19740622	JP 1970-43680	1970 0523

<--

PRIORITY APPLN. INFO.: JP 1970-43680 1970  
0523

AB The addition of RSH (R = alkyl) to R<sub>1</sub>CH:CR<sub>2</sub>CHO (R<sub>1</sub>, R<sub>2</sub> = H, alkyl) to give RSCH<sub>2</sub>CHR<sub>2</sub>CHO was promoted by strong acid catalysts, which activated the

double bond by protonating the CO group. Thus, CH<sub>2</sub>:CHCHO was added dropwise at 0-6.8° to MeSH and HCl, then held 1 hr at 30° to give 86.5% MeSCH<sub>2</sub>CH<sub>2</sub>CHO.

IT 74-93-1  
(addition reaction with acrolein)

RN 74-93-1 HCPLUS

CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C-SH

IT 3268-49-3P  
(preparation of)

RN 3268-49-3 HCPLUS

CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

MeS-CH<sub>2</sub>-CH<sub>2</sub>-CHO

IC C07C; B01J  
CC 23-14 (**Aliphatic** Compounds)  
IT 74-93-1  
(addition reaction with acrolein)  
IT 3268-49-3P 19378-51-9P  
(preparation of)

L29 ANSWER 33 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1973:57756 HCPLUS Full-text  
DOCUMENT NUMBER: 78:57756  
TITLE: Methional  
INVENTOR(S): Wakamatsu, Hachiro; Sato, Eiji; Sato, Haruyoshi; Ono, Yoshio  
PATENT ASSIGNEE(S): Ajinomoto Co., Inc.  
SOURCE: Jpn. Tokkyo Koho, 5 pp.  
CODEN: JAXXAD  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

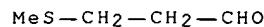
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 47043925	B4	19721107	JP 1968-63178	1968 0903

<--

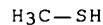
AB C6H<sub>6</sub>, MeOH, Me<sub>2</sub>CO, AcOEt, Et<sub>2</sub>O, tetrahydrofuran, Me<sub>2</sub>S, EtSMe, and n-heptane were used as solvents (0.4 l./mole MeSH) for the manufacture of MeSCH<sub>2</sub>CH<sub>2</sub>CHO (I) by treating MeSH, CH<sub>2</sub>:CH<sub>2</sub>, and CO in the presence of radical reaction initiators. Thus, 30 ml. n-heptane, 120 mg azobisisobutyronitrile, 0.64 g MeSH, and a gas mixture (665 kg/cm<sup>2</sup>) of CO and CH<sub>2</sub>:CH<sub>2</sub> (25:1) was heated 2 hr at 80° to give 0.65 g I.

IT 3268-49-3P  
(preparation of)

RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

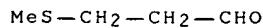


IT 74-93-1  
(reaction of, with carbon monoxide and ethylene in solvents)  
RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)



IC C07C  
CC 23-14 (Aliphatic Compounds)  
IT 3268-49-3P  
(preparation of)  
IT 74-93-1  
(reaction of, with carbon monoxide and ethylene in solvents)

L29 ANSWER 34 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1973:42803 HCPLUS Full-text  
DOCUMENT NUMBER: 78:42803  
TITLE: Formation of methional and methanethiol from methionine  
AUTHOR(S): Wainwright, T.; McMahon, J. F.; McDowell, J.  
CORPORATE SOURCE: Res. Lab., Arthur Guinness Son and Co.  
(Dublin) Ltd., Dublin, Ire.  
SOURCE: Journal of the Science of Food and Agriculture  
(1972), 23(7), 911-14  
CODEN: JSFAAE; ISSN: 0022-5142  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB Methanethiol is formed from methionine and sulfite in a reaction catalyzed by Fe or Mn(II) ions. Methionine sulfoxide and dimethyl disulfide are other products of the reaction. Methional [3-(methylthio)propional] is postulated as an intermediate in the reaction.  
IT 3268-49-3P  
(from decarboxylation of methionine)  
RN 3268-49-3 HCPLUS  
CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)



IT 74-93-1P  
(from decomposition of methionine)  
RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

CC 23-7 (**Aliphatic** Compounds)  
IT **3268-49-3P**  
    (from decarboxylation of methionine)  
IT **74-93-1P** 624-92-0P  
    (from decomposition of methionine)

L29 ANSWER 35 OF 35 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1967:463677 HCPLUS Full-text

DOCUMENT NUMBER: 67:63677

TITLE: Addition of methanethiol to some  
α,β-unsaturated aldehydes and study  
of the reduction and acetalization of the  
addition products

AUTHOR(S): Boustany, Kamel S.

CORPORATE SOURCE: Neuchatel Univ., Neuchatel, Switz.

SOURCE: Journal of Chemistry of the U.A.R. (1966), 9(3), 317-22

CODEN: JCURAS

DOCUMENT TYPE: Journal

LANGUAGE: English

AB To 0.5 mole α,β-unsatd. aldehyde at -20° is added a catalyst (piperidine or copper acetate) and 0.45 mole MeSH (previously chilled to -20°), the mixture stirred 14 hrs. at 30-5°, extracted with Et<sub>2</sub>O, washed with 2N HCl and H<sub>2</sub>O, the ethereal solution evaporated, and the residue distilled to give the corresponding 3-(methylthio)aldehyde (I). The I prepared were: 3-(methylthio)propanal, b<sub>14</sub> 61°, d<sub>20</sub> 1.036, n<sub>20D</sub> 1.4850, 2,4-dinitrophenylhydrazone, m. 121-2°; 3-(methylthio)butanal, b<sub>10</sub> 63°, 0.997, 1.4771 2,4-dinitrophenylhydrazone, m. 173-4°; and 3-(methylthio)-2-ethylhexanal, b<sub>0.2</sub> 74°, 0.954, 1.4759. Reduction of I with LiAlH<sub>4</sub> in Et<sub>2</sub>O gave the corresponding alcs.: 3-(methylthio)propanol, b<sub>11</sub> 87°, 1.030, 1.4899; 3-(methylthio)butanol, b<sub>10</sub> 86°, 0.999, 1.4865; and 3-(methylthio)-2-ethylhexanol, b<sub>0.6</sub> 84°, 0.957, 1.4833. The alcs. treated with an excess of an acid or anhydride in the presence of p-toluenesulfonic acid gave the corresponding esters: 3-(methylthio)propyl acetate, b<sub>14</sub> 96°, 1.041, 1.4636; 3-(methylthio)propyl butyrate, b<sub>11</sub> 108°, 0.994, 1.4580; 3-(methylthio)butyl formate, b<sub>9</sub> 78°, 1.039, 1.4680; and 3-(methylthio)-2-ethylhexyl formate, b<sub>0.2</sub> 109°, 0.984, 1.4714. I treated with alc. (an excess of 50-100%) in the presence of p-toluenesulfonic acid, the reaction mixture refluxed 4-6 hrs., extracted with Et<sub>2</sub>O, and worked up gave the corresponding 3-(methylthio)acetals: 3-(methylthio)propanal diethylacetal, b<sub>12</sub> 91°, 0.960, 1.4525; 3-(methylthio)propanal glycol acetal, b<sub>11</sub> 93°, 1.107, 1.4839; 3-(methylthio)butanal, glycol acetal, b<sub>9</sub> 90°, 1.071, 1.4831; and 3-(methylthio)butanal dimethylacetal, b<sub>10</sub> 73°, 0.980, 1.4562. 3-(Methylthio) acids are prepared by addition of Me<sub>3</sub>SH to the corresponding unsatd. ester followed by saponification. Thus, 3-(methylthio)butyric acid, b<sub>10</sub> 127°, 1.105, 1.4833, was obtained from the corresponding ester. 2-(Methylthio) acetic acid, b<sub>11</sub> 103°, 1.227, 1.4933, was prepared by reaction of Me<sub>3</sub>Na and ClCH<sub>2</sub>CO<sub>2</sub>H in the presence of aqueous NaOH.

IT **3268-49-3P**

(preparation of)

RN 3268-49-3 HCPLUS

CN Propanal, 3-(methylthio)- (9CI) (CA INDEX NAME)

MeS—CH<sub>2</sub>—CH<sub>2</sub>—CHO

IT 74-93-1  
(reaction of, with  $\alpha$ -unsatd. alkenals)  
RN 74-93-1 HCPLUS  
CN Methanethiol (8CI, 9CI) (CA INDEX NAME)

H<sub>3</sub>C—SH

CC 23 (Aliphatic Compounds)  
IT 505-10-2P 646-01-5P 2444-37-3P **3268-49-3P**  
7372-49-8P 16630-52-7P 16630-53-8P 16630-54-9P 16630-55-0P  
16630-56-1P 16630-57-2P 16630-58-3P 16630-59-4P  
16630-60-7P 16630-61-8P 16630-62-9P 16630-64-1P  
16630-65-2P 16630-66-3P 18413-10-0P  
(preparation of)  
IT 74-93-1  
(reaction of, with  $\alpha$ -unsatd. alkenals)

=> fil casreact  
FILE 'CASREACT' ENTERED AT 09:12:47 ON 26 OCT 2006  
USE IS SUBJECT TO THE TERMS OF YOUR CUSTOMER AGREEMENT  
COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications.

FILE CONTENT:1840 - 22 Oct 2006 VOL 145 ISS 17

New CAS Information Use Policies, enter HELP USAGETERMS for details.

\*\*\*\*\*  
\*  
\* CASREACT now has more than 10 million reactions \*  
\*  
\*\*\*\*\*

Some CASREACT records are derived from the ZIC/VINITI database (1974-1991)

provided by InfoChem, INPI data prior to 1986, and Biotransformations database compiled under the direction of Professor Dr. Klaus Kieslich.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d que 110  
L8 STR

RRT PRO  

$$\begin{array}{c} \text{H3C} \sim \text{S} \sim \text{H} \\ | \quad | \\ 1 \quad 2 \end{array} \quad \begin{array}{c} \text{OHC} \sim \text{C} \sim \text{C} \sim \text{S} \sim \text{CH}_3 \\ | \quad | \quad | \quad | \\ 3 \quad 4 \quad 5 \quad 6 \quad 7 \end{array}$$

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE

L10 12 SEA FILE=CASREACT SSS FUL L8 ( 15 REACTIONS)

=> d 110 1-12 ibib abs fhit

L10 ANSWER 1 OF 12 CASREACT COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 145:166862 CASREACT Full-text

TITLE: Catalytic method for the production of  
 3-(alkylthio)propanals from mercaptans and  
 glycerine

INVENTOR(S): Redlingshoefer, Hubert; Weckbecker, Christoph;  
 Huthmacher, Klaus; Fischer, Achim; Barth,  
 Jan-Olaf

PATENT ASSIGNEE(S): Degussa AG, Germany

SOURCE: Ger. Offen., 7 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

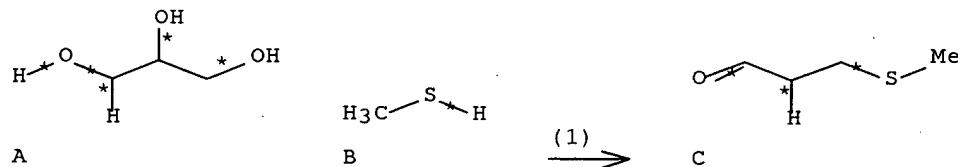
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102005003990	A1	20060803	DE 2005-10200500399020050128	
WO 2006079582	A1	20060803	WO 2006-EP50132	20060110
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
US 2006183945	A1	20060817	US 2006-340673	20060127
PRIORITY APPLN. INFO.:			DE 2005-10200500399020050128	

OTHER SOURCE(S): MARPAT 145:166862

AB 3-(Alkylthio)propanals RSCH<sub>2</sub>CH<sub>2</sub>CHO [R = H, C1-3 alkyl; e.g., 3-(methylthio)propanal] are prepared in high yield and selectivity by the reaction of mercaptans RSH (e.g., Me mercaptan) with glycerol in the presence of catalysts (e.g., HZSM-5 zeolites).

RX(1) OF 1 A + B ==> C



RX(1) RCT A 56-81-5, B 74-93-1  
 PRO C 3268-49-3  
 SOL 67-56-1 MeOH  
 CON 1 hour, 300 deg C, 61 bar  
 NTE reaction run in an autoclave, HZSM-5, Modul 28 zeolite catalyst used, catalyst calinated prior to use, reaction run at lower pressure for short time lead to side product formation, high pressure

L10 ANSWER 2 OF 12 CASREACT COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 144:214741 CASREACT Full-text  
 TITLE: Method and catalysts for preparing  
 3-(methylthio)propanal from acrolein and  
 methyl mercaptan and for the manufacture of  
 2-hydroxy-4-(methylthio)butanenitrile from it  
 and hydrogen cyanide  
 INVENTOR(S): Dubner, Frank; Weckbecker, Christoph  
 PATENT ASSIGNEE(S): Germany  
 SOURCE: U.S. Pat. Appl. Publ., 8 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2006030739	A1	20060209	US 2005-198609	20050805
US 7119233	B2	20061010		
DE 102004038053	A1	20060427	DE 2004-10200403805320040805	
WO 2006015684	A2	20060216	WO 2005-EP7666	20050714
WO 2006015684	A3	20060803		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
 CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
 ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
 KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,  
 MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG,

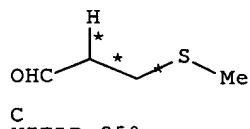
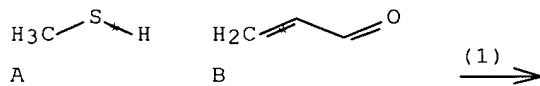
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ,  
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR,  
HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI,  
SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL,  
SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.:

DE 2004-10200403805320040805

AB A method is described for preparing 3-(methylthio)propanal (I) by the addition reaction of Me mercaptan to acrolein in the presence of macroreticular resin catalysts containing pendant tertiary-amine groups [e.g., [(dimethylamino)methyl]styrene copolymer] to give I which is then reacted with HCN in the presence of the same catalyst to give 2-hydroxy-4-(methylthio)butanenitrile. Process flow diagrams are presented.

RX(1) OF 6      A + B ==> C



RX(1)      RCT A 74-93-1

STAGE(1)

CAT 9040-03-3 Benzenemethanamine, ar-ethenyl-N,N-dimethyl-, homopolymer  
CON 10 minutes, 0 deg C

STAGE(2)

RCT B 107-02-8  
CON 2 hours, 0 deg C

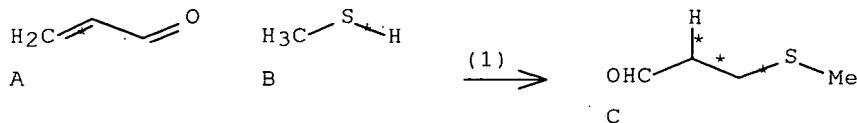
PRO C 3268-49-3

NTE solid-supported catalyst on Merrifield resin,  
3-(methylthio)propanal used as reaction medium,  
batchwise synthesis

REFERENCE COUNT:      14      THERE ARE 14 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L10 ANSWER 3 OF 12 CASREACT COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 140:356948 CASREACT Full-text  
 TITLE: Catalytic addition reaction for the production  
 of 3-(methylthio)propanal from mercaptomethane  
 and acrolein  
 INVENTOR(S): Rey, Patrick  
 PATENT ASSIGNEE(S): Adisseo France S.A.S., Fr.  
 SOURCE: Eur. Pat. Appl., 10 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1413573	A1	20040428	EP 2002-356211	20021024
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
CA 2495746	AA	20040506	CA 2003-2495746	20031014
WO 2004037774	A1	20040506	WO 2003-IB4557	20031014
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2003267771	A1	20040513	AU 2003-267771	20031014
EP 1556343	A1	20050727	EP 2003-748466	20031014
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
BR 2003015385	A	20050823	BR 2003-15385	20031014
CN 1705641	A	20051207	CN 2003-80101589	20031014
JP 2006515834	T2	20060608	JP 2004-546263	20031014
US 2005240048	A1	20051027	US 2005-524548	20050516
NO 2005002471	A	20050725	NO 2005-2471	20050523
PRIORITY APPLN. INFO.:			EP 2002-356211	20021024
			WO 2003-IB4557	20031014
AB	A process for the production of 3-(methylthio)propanal comprises reacting mercaptomethane and acrolein in the presence of a catalyst comprising an organic base such as an N-alkylmorpholine (e.g., 4-methylmorpholine).			



RX(1) RCT A 107-02-8, B 74-93-1

PRO C 3268-49-3

CAT 64-19-7 AcOH, 109-02-4 N-Methylmorpholine

SOL 74-93-1 MeSH

CON SUBSTAGE(1) room temperature  $\rightarrow$  40 deg C

SUBSTAGE(2) 40 deg C

NTE optimization study, optimized on catalyst

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L10 ANSWER 4 OF 12 CASREACT COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 140:287102 CASREACT Full-text

TITLE: Method for producing 3-methylthiopropanal from acrolein and methyl mercaptan

INVENTOR(S): Shiozaki, Tetsuya; Haga, Toru

PATENT ASSIGNEE(S): Sumitomo Chemical Company, Limited, Japan

SOURCE: U.S. Pat. Appl. Publ., 4 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

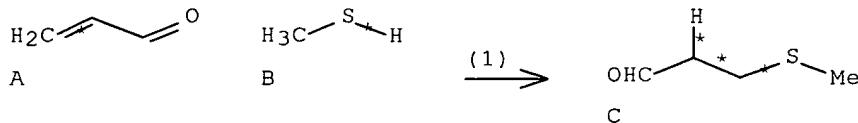
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004063650	A1	20040401	US 2003-665006	20030922
JP 2004115461	A2	20040415	JP 2002-282874	20020927
EP 1408029	A1	20040414	EP 2003-21191	20030924
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
CN 1496979	A	20040519	CN 2003-125534	20030925

PRIORITY APPLN. INFO.: JP 2002-282874 20020927

AB 3-Methylthiopropanal is produced in high yield and selectivity by supplying acrolein and Me mercaptan together or sequentially with an acidic compound (e.g., acetic acid) and a basic compound (e.g., pyridine) into a reaction system to react the acrolein with the Me mercaptan, where the basic compound is used in an amount of about 0.3 mol or less per mol of the acidic compound

RX(1) OF 1 A + B ==> C



RX(1) RCT A 107-02-8, B **74-93-1**  
 RGT D 64-19-7 AcOH  
 PRO C **3268-49-3**  
 SOL 110-86-1 Pyridine  
 CON 45 - 50 minutes, 70 deg C  
 NTE other products detected

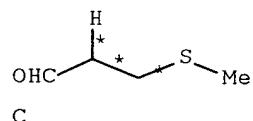
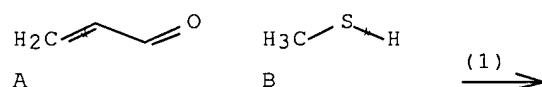
L10 ANSWER 5 OF 12 CASREACT COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 128:114715 CASREACT Full-text  
TITLE: Processes for the preparation of  
3-(methylthio)propanal and  
2-hydroxy-4-(methylthio)butanenitrile  
INVENTOR(S): Blackburn, Thomas F.; Pellegrin, Paul F.  
PATENT ASSIGNEE(S): Novus International, Inc., USA  
SOURCE: U.S., 9 pp., Cont.-in-part of U.S. 5,663,409.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 2  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5705675	A	19980106	US 1995-581249	19951229
US 5663409	A	19970902	US 1995-476356	19950607
ZA 9604335	A	19960820	ZA 1996-4335	19960528
WO 9640631	A1	19961219	WO 1996-US9060	19960604
W:	AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI			
RW:	KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML			
AU 9659873	A1	19961230	AU 1996-59873	19960604
AU 714151	B2	19991223		
EP 830341	A1	19980325	EP 1996-917222	19960604
EP 830341	B1	20010905		
R:	BE, DE, DK, ES, FR, GB, IT, LU, NL, MC, PT, IE			
CN 1189818	A	19980805	CN 1996-195190	19960604
CN 1092184	B	20021009		
JP 11511119	T2	19990928	JP 1997-501471	19960604
RU 2173681	C2	20010920	RU 1998-100220	19960604
ES 2160819	T3	20011116	ES 1996-917222	19960604
PT 830341	T	20011228	PT 1996-917222	19960604
CN 1510030	A	20040707	CN 2002-200212645719960604	
PRIORITY APPLN. INFO.:			US 1995-476356	19950607
			US 1995-581249	19951229
			WO 1996-US9060	19960604
OTHER SOURCE(S):			M2PRINT 120 114715	

OTHER SOURCE(S): MARPAT 128:114715

AB A catalytic processes for the preparation of 3-(methylthio)propanal and 2-hydroxy-4-(methylthio)butanenitrile using novel addition catalysts is described. The novel addition catalysts include: triisopropanolamine, nicotinamide, imidazole, benzimidazole, 2-fluoropyridine, poly-4-vinylpyridine, 4-dimethylaminopyridine, picoline, pyrazine, trialkylamines, and tertiary amines. E.g., reaction of MeSH and acrolein in presence of poly-4-vinylpyridine gave 89.0% 3-(methylthio)propanal. The aldehyde product, containing the poly-4-vinylpyridine catalyst, was converted to the nitrile in the same reactor by treatment with HCN. The yield of nitrile was 72.9%.

RX(1) OF 3 A + B ==> C...



RX(1) RCT A 107-02-8, B 74-93-1  
 PRO C 3268-49-3  
 CAT 110-86-1 Pyridine, 64-19-7 AcOH  
 NTE novel process focuses on the catalyst/acid combination;  
 process minimizes the extent of polymer formation  
 REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

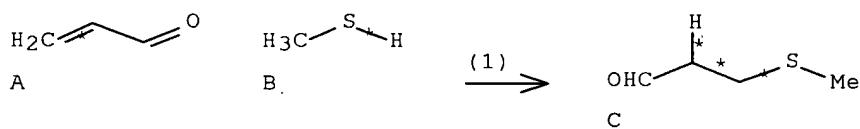
L10 ANSWER 6 OF 12 CASREACT COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 126:157183 CASREACT Full-text  
 TITLE: Process for the continuous preparation of  
 3-(methylthio)propanal from acrolein and  
 methyl mercaptan  
 INVENTOR(S): Hsu, Yung C.  
 PATENT ASSIGNEE(S): Novus International, Inc., USA  
 SOURCE: PCT Int. Appl., 85 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 4  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9700858	A1	19970109	WO 1996-US10920	19960621

W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE,  
 DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ,  
 LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ,  
 PL, PT, RO, RU, SD, SE, SG, SI  
 RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR,  
 GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI,  
 CM, GA, GN, ML  
 US 5905171 A 19990518 US 1996-667099 19960620  
 AU 9663959 A1 19970122 AU 1996-63959 19960621  
 AU 726921 B2 20001123  
 EP 842149 A1 19980520 EP 1996-923452 19960621  
 EP 842149 B1 20030205  
 R: BE, DE, DK, ES, FR, GB, IT, LU, NL, MC, PT, IE  
 CN 1188470 A 19980722 CN 1996-194943 19960621  
 CN 1120834 B 20030910  
 JP 11508266 T2 19990721 JP 1997-504005 19960621  
 RU 2172734 C2 20010827 RU 1998-100590 19960621  
 ES 2192607 T3 20031016 ES 1996-923452 19960621  
 PRIORITY APPLN. INFO.: US 1995-421P 19950622  
 US 1996-667099 19960620  
 WO 1996-US10920 19960621

AB In the title process, a liquid reaction, medium containing 3-(methylthio)propanal and a catalyst for the reaction between Me mercaptan and acrolein, is contacted with a gaseous acrolein feed stream in a gas-liquid contact zone. The gaseous acrolein feed stream comprises acrolein vapor and noncondensable gas and the acrolein is transferred from the acrolein feed stream to the reaction medium. Me mercaptan, introduced into the reaction medium, reacts with the acrolein in that medium, producing a liquid reaction product containing 3-(methylthio)propanal. The noncondensable gas is then separated from the liquid reaction product the reaction product is divided into a produce fraction and a circulating fraction, and the circulating fraction is recycled to the gas/liquid contact zone. Process flow diagrams are presented.

RX(1) OF 1 A + B ==> C



RX(1) RCT A 107-02-8, B 74-93-1  
 PRO C 3268-49-3  
 NTE continous process

L10 ANSWER 7 OF 12 CASREACT COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 124:184625 CASREACT Full-text  
 TITLE: Process for the treatment and conditioning of  
 solid or liquid effluents charged with heavy  
 metals  
 INVENTOR(S): Leybros, Jean  
 PATENT ASSIGNEE(S): Commissariat a l'Energie Atomique, Fr.

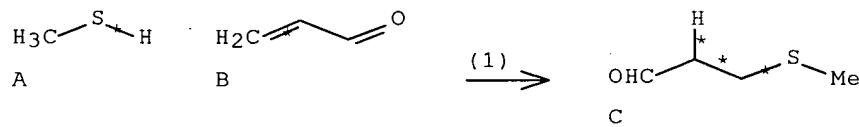
SOURCE: Eur. Pat. Appl., 9 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 687483	A1	19951220	EP 1995-401367	19950613
EP 687483	B1	19980826		
R: BE, CH, DE, ES, GB, IT, LI, NL				
FR 2721237	A1	19951222	FR 1994-7297	19940615
FR 2721237	B1	19960802		
ES 2123221	T3	19990101	ES 1995-401367	19950613
FR 1994-7297 19940615				

PRIORITY APPLN. INFO.:

AB The effluent is treated with a reducing agent (e.g., SO<sub>2</sub>) and then contacted with an organic extractant (e.g., bis(2-ethylhexyl)phosphoric acid) and a hydrocarbon (e.g., hydrogenated tetrapropylene) for selective removal of the metal ions, followed by removing the heavy metals from the organic extract by a 2nd aqueous extraction, and precipitating and filtering the metals from the aqueous solution

RX(1) OF 1      **A** + **B** ==> **C**



RX(1)      RCT A 74-93-1, B 107-02-8

PRO C 3268-49-3

NTE Classification: S-Alkylation; "1,4-Addition"; #  
 Conditions: (AcO)<sub>2</sub>; <50 deg 2atm; # Comments: 4.7.49

L10 ANSWER 8 OF 12 CASREACT COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 120:133858 CASREACT Full-text

TITLE: Process for producing 2-hydroxy-4-methylthiobutanoic acid

INVENTOR(S): Matsuoka, Kazuyuki

PATENT ASSIGNEE(S): Daicel Chemical Industries, Ltd., Japan

SOURCE: PCT Int. Appl., 21 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9323372	A1	19931125	WO 1993-JP659	19930520
W: US				

RW: BE, DE, FR, GB

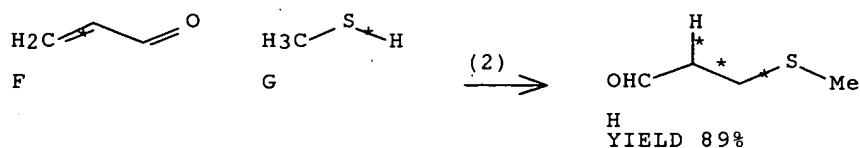
JP 06049020 A2 19940222  
JP 3219544 B2 20011015  
EP 601195 A1 19940615  
EP 601195 B1 19960828  
R: BE, DE, FR, GB  
CN 1084511 A 19940330  
CN 1036391 B 19971112  
US 5386056 A 19950131

JP 1993-143026 19930520  
EP 1993-910360 19930520  
CN 1993-107598 19930521  
US 1994-178315 19940112  
JP 1992-155802 19920521  
WO 1993-JP659 19930520

PRIORITY APPLN. INFO.:

AB A process for producing 2-hydroxy-4-methylthiobutanoic acid (I) together with methanol comprises hydrating 2-hydroxy-4-methylthiobutyronitrile (II) into 2-hydroxy-4-methylthiobutanamide (III), reacting the amide with Me formate to yield Me 2-hydroxy-4-methylthiobutanoate (IV) and formamide, and hydrolyzing the Me ester. The discharge of a large amount of ammonium sulfate can be prevented, because no sulfuric acid is used as the reactant. The byproduct formamide and methanol are utilizable as the starting material of the reaction after converting them into HCN and Me formate, resp. Thus, addition of MeSH to acrolein in the presence of Cu(OAc)<sub>2</sub> and hydroquinone and addition of the resulting 3-methylthiopropionaldehyde with HCN in the presence of NaOH in MeOH gave II. Hydration of II in the presence of MnO<sub>2</sub> in aqueous acetone at 60° for 6 h to give III which was reacted with HCO<sub>2</sub>Me in MeOH containing MeONa to give IV and the byproduct formamide. Hydrolysis of IV in the presence of Amberlyst 15 in H<sub>2</sub>O at 95° gave I, while the byproduct MeOH was recovered. Formamide was fed into a stainless steel reactor packed with alumina at 500° to give HCN. MeOH was contacted with a catalyst prepared from Cu(NO<sub>3</sub>)<sub>2</sub> and ammonium chromate in a stainless steel reactor to give Me formate.

RX(2) OF 15 F + G ==> H...



RX(2) RCT F 107-02-8, G 74-93-1

PRO H 3268-49-3

CAT 123-31-9 Hydroquinone, 142-71-2 Cu(OAc)<sub>2</sub>

NTE 20°

L10 ANSWER 9 OF 12 CASREACT COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 114:207514 CASREACT Full-text

TITLE: Influence of phosphoric ester groups in  
geranyldiphosphate biosynthesis

AUTHOR(S): Jacob, L.; Julia, M.; Pfeiffer, B.; Rolando,  
C.

CORPORATE SOURCE: Lab. Chim. 24, Ec. Norm. Super., Paris, 75231,  
Fr.

SOURCE: Bulletin de la Societe Chimique de France

(1990), (Nov.-Dec.), 719-33  
CODEN: BSCFAS; ISSN: 0037-8968

DOCUMENT TYPE:

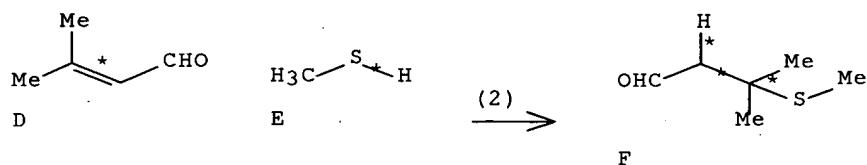
Journal

LANGUAGE:

English

AB A variety of elimination reactions of sulfonium salts related to intermediates in geranyl diphosphate biosynthesis confirmed that the direction of elimination is strongly influenced by the phosphate residue favoring the formation of the natural isomer. Thus, elimination of  $\text{Me}_2\text{S} + \text{CMe}_2\text{CH}_2\text{CH}_2\text{OP(O)OMe} 2\text{BF}_4^-$  by  $\text{NaOD}-\text{MeOD}$  2 h at  $20^\circ$  gave 72% natural isomer  $\text{Me}_2\text{C:CHCH}_2\text{OP(O)OMe}_2$  (I); elimination by  $\text{Me}_3\text{COK}-\text{DMSO}-\text{d}_6$  gave 95% of an isomeric mixture containing 63% I and 37%  $\text{CH}_2:\text{CMeCH}_2\text{CH}_2\text{OP(O)OMe}_2$ . Elimination of  $\text{Me}_2\text{S} + \text{CRM}_2\text{CH}_2\text{CH}_2\text{OP(O)OMe}_2$  ( $\text{R} = \text{prenyl}$ ) by  $\text{NaOEt}-\text{EtOH}$  gave 70% (glc) of a mixture containing 27% (E)- $\text{RCH}_2\text{CMe:CHCH}_2\text{OP(O)OMe}_2$ , 67% (Z)- $\text{RCH}_2\text{CMe:CHCH}_2\text{OP(O)OMe}_2$ , 4%  $\text{RCH}_2\text{C}(:\text{CH}_2)\text{CH}_2\text{CH}_2\text{OP(O)OMe}_2$ , and 2%  $\text{RCH:CH}_2\text{CMeCH}_2\text{CH}_2\text{OP(O)OMe}_2$ . Addnl. elimination reactions under solvolytic conditions were also carried out.

RX(2) OF 39      D + E ==> F...



RX(2)      RCT D 107-86-8, E 74-93-1  
PRO F 133567-89-2

L10 ANSWER 10 OF 12 CASREACT COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 51:47157 CASREACT Full-text

TITLE: 3-(Methylthio)propanal

INVENTOR(S): Hunt, Madison; Merner, Richard R.

PATENT ASSIGNEE(S): E. I. du Pont de Nemours & Co.

DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

FAMILY ACC. NUM. COUNT: 1

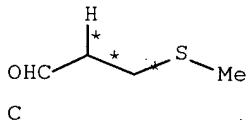
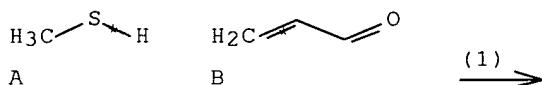
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----

US 2776996 19570108 US

AB A mixture of  $\text{MeSH}$  (I) 440 and pyridine 16 is fed into acrolein 500 and  $\text{HOAc}$  5 parts in an autoclave below  $75^\circ$ . The final portion of 3-(methylthio)-propanal (II) and I is added rapidly at  $40^\circ$  to give 91-7% II.

RX(1) OF 1      A + B ==> C



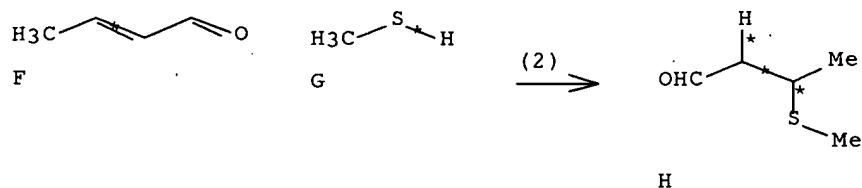
RX(1) RCT A 74-93-1, B 107-02-8  
 PRO C 3268-49-3  
 SOL 110-86-1 Pyridine, 64-19-7 AcOH  
 NTE Classification: S-Alkylation; "1,4-Addition"; #  
 Conditions: MeSH pyridine AcOH; 70-75 deg; # Comments:  
 high yield

L10 ANSWER 11 OF 12 CASREACT COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 50:73727 CASREACT Full-text  
 TITLE: Sulfur-containing amino acids  
 AUTHOR(S): Reisner, David B.  
 CORPORATE SOURCE: Wallace & Tiernan, Inc., Newark, NJ  
 SOURCE: Journal of the American Chemical Society  
 (1956), 78, 2132-5  
 CODEN: JACSAT; ISSN: 0002-7863  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Unavailable  
 GI For diagram(s), see printed CA Issue.  
 AB MeCH:CHCHO (140 g.) and 96 g. MeSH in the presence of 2 drops of piperidine stirred 0.5 hr. at 5-10° and 3 hrs. at room temperature, the mixture treated with an addnl. 28 g. MeSH, heated about 1 hr. at 90°, diluted with 500 cc. Et<sub>2</sub>O, washed with dilute HCl and H<sub>2</sub>O, dried, and evaporated, and the residue distilled gave 201 g. MeSCHMeCH<sub>2</sub>CHO (I), b<sub>23</sub> 80°. AcCH:CH<sub>2</sub> (27 g.) and 18 g. MeSH yielded 35.4 g. Ac(CH<sub>2</sub>)<sub>2</sub>SMe, b<sub>55</sub> 106°, n<sub>D25</sub> 1.4711. I (48.5 g.), 113 g. (NH<sub>4</sub>)<sub>3</sub>SO<sub>3</sub>, 25.5 g. NaCN, 335 cc. EtOH, and 335 cc. H<sub>2</sub>O heated 5 hrs. with stirring at 55°, the mixture concentrated to about 300 cc., treated cautiously with 50 cc. concentrated HCl, heated 7 min. at about 90°, refrigerated, and filtered, and the residue washed with 200 cc. H<sub>2</sub>O yielded 49 g. 5-(β-benzylmercapto)propylhydantoin, m. 117-18°(from EtOAc). Similarly were prepared the following compds. RR'C.CO.NH.CO.NH (R, R', m.p., and % yield given): MeS(CH<sub>2</sub>)<sub>2</sub>, Me, 109.5-10.5°, 93.8; MeSCHMeCH<sub>2</sub>, H, 191-2°, 50.1; MeSCHPhCH<sub>2</sub>, H, 173-4°, 491. S-Benzyl-4-methylhomocysteine (7.17 g.), m. 222.5-3.5° (decomposition) (from H<sub>2</sub>O) (obtained in 94% yield from the hydantoin) (0.69, 0.74, 0.93) (the figures given in parentheses through out this abstract represent the R<sub>f</sub> values of the resp. compds. obtained by ascending paper chromatography with BuOH-AcOH, lutidine-collidine, and PhOH-H<sub>2</sub>O, resp.) in 300 cc. liquid NH<sub>3</sub> treated with about 1.7 g. Na, the solution decolorized with about 1 g. NH<sub>4</sub>Cl, treated with 5 cc. MeI, and evaporated, the residue treated with 125 cc. H<sub>2</sub>O, washed with Et<sub>2</sub>O, filtered, neutralized with concentrated HCl to pH about 6, concentrated to about 50 cc., diluted with 50 cc. Me<sub>2</sub>CO, and refrigerated, and the crystalline deposit recrystd. from

aqueous MeOH yielded 4.1 g.  $\text{MeSCHMeCH}_2\text{CH}(\text{NH}_2)\text{CO}_2\text{H}$  (II), m. 236-7° (decomposition), (0.44, 0.53, 0.79). Similarly were prepared:  $\text{MeS}(\text{CH}_2)_2\text{CMe}(\text{NH}_2)\text{CO}_2\text{H}$ , 61%, m. 284-5° (decomposition) (from aqueous MeOH), (0.45, 0.50, 0.77);  $\text{MeSCHPh}(\text{CH}_2)_2\text{CH}(\text{NH}_2)\text{CO}_2\text{H}$ , 49.3%, m. 201-2° (decomposition) (from H<sub>2</sub>O). BzCH<sub>2</sub>SMe (21.8 g.) in 50 cc. dry Et<sub>2</sub>O added with stirring to 1.4 g. LiAlH<sub>4</sub> in 10 cc. dry Et<sub>2</sub>O, the mixture refluxed 1 hr. with stirring, cooled, and treated with stirring with 200 cc. ice water and 100 cc. 5N H<sub>2</sub>SO<sub>4</sub>, the aqueous layer washed with Et<sub>2</sub>O, the combined Et<sub>2</sub>O solns. washed, dried, and evaporated under a jet of dry air, and the residue distilled gave 18.4 g.  $\text{MeSCH}_2\text{CH}(\text{OH})\text{Ph}$  (III), b1.8 113-14.5°. III (170 mg.) treated with MeI yielded III. MeI, m. 134-5° (decomposition). III (15.8 g.) in 25 cc. dry CHCl<sub>3</sub> treated with cooling with 9.2 g. SOC<sub>12</sub> in 15 cc. dry CHCl<sub>3</sub>, the mixture cooled 0.5 hr., kept at room temperature overnight and evaporated, the residue heated gently with 5 cc. dry CHCl<sub>3</sub> and 5 cc. SOC<sub>12</sub>, and the mixture distilled gave 14.3 g.  $\text{MeSCH}_2\text{CHClPh}$  (IV), b2.8 106-7°, nD<sub>25</sub> 1.5692.  $\text{AcNHCH}(\text{CO}_2\text{Et})_2$  (11.6 g.) and 200 mg. KI added with stirring to 1.23 g. Na in 100 cc. absolute EtOH, the mixture treated with 10 g. IV in 1 portion, stirred 2 hrs. at room temperature, refluxed 5 hrs., and filtered hot, the residue washed with about 50 cc. hot EtOH, the combined alc. solns. evaporated to dryness in vacuo, the residual oil kept at room temperature overnight, and the crystalline material washed with dilute HCl and H<sub>2</sub>O and dried in vacuo over KOH pellets yielded 16 g.  $\text{MeSCH}_2\text{CHPhC}(\text{NHAc})(\text{CO}_2\text{Et})_2$  (V), m. 95-6° (from Et<sub>2</sub>O-pentane). Crude V (14.4 g.), 40 cc. H<sub>2</sub>O, and 10 cc. concentrated HCl refluxed 6 hrs. with stirring, the mixture treated with 40 cc. H<sub>2</sub>O and 10 cc. concentrated HCl, refluxed 1.5 hrs. with stirring, cooled to room temperature, the solid refluxed 8 hrs. with stirring with 80 cc. glacial AcOH and 10 cc. concentrated HCl, treated with Norit, and filtered, the residue washed with H<sub>2</sub>O, the combined filtrates evaporated in vacuo, the residue (about 10 g.) triturated with 50 cc. Me<sub>2</sub>CO and filtered, and the residue washed with Me<sub>2</sub>CO and dried yielded 5 g.  $\text{MeSCH}_2\text{CHPhCH}(\text{NH}_2)\text{CO}_2\text{H} \cdot \text{HCl}$  (VI.HCl), m. 208-9° (decomposition); the Me<sub>2</sub>CO solns. combined and evaporated to dryness, the residue refluxed 6.5 hrs. with 25 cc. H<sub>2</sub>O, 25 cc. glacial AcOH, and 10 cc. concentrated HCl, the solution evaporated to dryness in vacuo, the residue washed with Me<sub>2</sub>CO and neutralized with AmNH<sub>2</sub>, and a 1-g. portion dissolved in 8 cc. H<sub>2</sub>O and neutralized with AmNH<sub>2</sub> to pH 6, diluted with 25 cc. Me<sub>2</sub>CO, and filtered, and the residue washed with 15 cc. Me<sub>2</sub>CO yielded 300 mg. VI; the filtrate diluted with Me<sub>2</sub>CO gave a 2nd crop, 350 mg. MeSH (14 g.) passed with stirring and cooling into 1.2 g. Na in 150 cc. absolute MeOH, the mixture treated with stirring and cooling with 50 g. Me α- benzamidosenecioate, diluted with 200 cc. absolute MeOH and 200 cc. dry C<sub>6</sub>H<sub>6</sub>, stirred 1 hr. at room temperature, allowed to stand overnight, treated with 3.12 g. glacial AcOH, and evaporated to dryness in vacuo at room temperature, the residue washed with warm dry C<sub>6</sub>H<sub>6</sub>, the C<sub>6</sub>H<sub>6</sub> evaporated, the residue (58 g.), 300 cc. 85% HCO<sub>2</sub>H, 300 cc. concentrated HCl, and 300 cc. H<sub>2</sub>O refluxed 6 hrs., the solution concentrated to about 50 cc., washed with Et<sub>2</sub>O, neutralized with AmNH<sub>2</sub> to pH 6, diluted with 350 cc. Me<sub>2</sub>CO, and refrigerated 2 days, and the white crystals washed with 300 cc. Me<sub>2</sub>CO and 200 cc. Et<sub>2</sub>O yielded 16.8 g. S-methylpenicillamine, m. 281-2° (0.38, 0.50, 0.80); it was also obtained in the same manner from 2-phenyl-4-isopropylidene-5-oxazolone and 30 g. MeSH. MeSH (16 g.) passed into 1.2 g. Na in 300 cc. absolute MeOH, the solution treated with cooling and stirring with 62.3 g. 2-phenyl-4-benzal-5-oxazolone in 500 cc. warm, dry C<sub>6</sub>H<sub>6</sub>, the mixture stirred about 1 hr., kept at room temperature, treated with 3.12 g. glacial AcOH, and evaporated to dryness in vacuo, the residue treated with 100 cc. warm C<sub>6</sub>H<sub>6</sub> and filtered, the filtrate diluted with 100 cc. warm C<sub>6</sub>H<sub>6</sub> and 500 cc. pentane, and chilled, and the deposit washed with 150 cc. pentane yielded 74 g. PhCH(SMe)CH(NHBz)CO<sub>2</sub>Me (VII), m. 97-8.5° (from EtOAc-pentane). Crude VII (32.9 g.) hydrolyzed with 150 cc. H<sub>2</sub>O, 150 cc. concentrated HCl, and 150 cc. 90% HCO<sub>2</sub>H, the solution concentrated in vacuo to near dryness, and the precipitate washed with three 100-cc. portions H<sub>2</sub>O, dissolved in 75 cc. H<sub>2</sub>O, neutralized to pH 6 with AmNH<sub>2</sub>, and chilled yielded 12.5 g. S-methyl-3-

phenylcysteine, m. 178-9° (decomposition) (0.51, 0.65, 0.88). The following sulfoxides were prepared by oxidation of the appropriate sulfides with H<sub>2</sub>O<sub>2</sub> by the method of Toennies and Kolb (C.A. 33, 5359.9) (% yield, m.p., and R<sub>f</sub> values given): PhCH<sub>2</sub>S(O)CHMeCH<sub>2</sub>CH(NH<sub>2</sub>)CO<sub>2</sub>H, 64.7, 214-15° (decomposition) (from H<sub>2</sub>O), (0.45, 0.60, 0.92); MeS(O)CH<sub>2</sub>CH<sub>2</sub>CMe(NH<sub>2</sub>)CO<sub>2</sub>H, 91.8, 239.5-40.5° (decomposition) (from aqueous MeOH), (0.14, 0.35, 0.77); MeS(O)CHMeCH<sub>2</sub>CH(NH<sub>2</sub>)CO<sub>2</sub>H (VIII), 84.4, 213.5-14.5° (from aqueous MeOH), (0.13, 0.40, 0.80); MeS(O)CH<sub>2</sub>CHPhCH(NH<sub>2</sub>)CO<sub>2</sub>H, 74.4, 205-6° (decomposition) (from aqueous MeOH), (0.33, 0.59, 0.87); MeS(O)CHPhCH<sub>2</sub>CH(NH<sub>2</sub>)CO<sub>2</sub>H, 87.7, 189-90° (decomposition) (from aqueous MeOH), (0.33, 0.47, 0.85); Me<sub>2</sub>CHCH[S(O)Me]CH(NH<sub>2</sub>)CO<sub>2</sub>H, 77.7, 166-7° (from aqueous MeOH), (0.14, 0.40, 0.76); PhCH[S(O)Me]CH(NH<sub>2</sub>)CO<sub>2</sub>H, 73.2, 147-8° (decomposition) (from aqueous MeOH), (0.29, 0.54, 0.82). VIII (600 mg.), 3 cc. H<sub>2</sub>O, 2 cc. MeOH, 0.2 cc. concentrated HCl, and 2 cc. 30% H<sub>2</sub>O<sub>2</sub> refluxed 2 hrs., treated with 1 cc. 30% H<sub>2</sub>O<sub>2</sub>, refluxed again 2 hrs., neutralized with AmNH<sub>2</sub> to pH 6.5, diluted with 100 cc. Me<sub>2</sub>CO and filtered, and the residue washed with 50 cc. Me<sub>2</sub>CO yielded 550 mg. MeS(O<sub>2</sub>)CHMeCH<sub>2</sub>CH(NH<sub>2</sub>)CO<sub>2</sub>H, m. 230-1° (decomposition) (from aqueous MeOH), (0.14, 0.50, 0.72). In the same manner was prepared PhCH<sub>2</sub>S(O<sub>2</sub>)CH<sub>2</sub>CH<sub>2</sub>CH(NH<sub>2</sub>)CO<sub>2</sub>H, 70.6%, m. 229-30° (decomposition) (from H<sub>2</sub>O), (0.50, 0.65, 0.84). The following sulfones were prepared by the oxidation on the appropriate sulfides with H<sub>2</sub>O<sub>2</sub> in the presence of NH<sub>4</sub> molybdate and HClO<sub>4</sub> by the method of Toennies and Kolb (C.A. 35, 6571.1) (% yield, m.p., and R<sub>f</sub> values given): MeS(O<sub>2</sub>)CH<sub>2</sub>CH<sub>2</sub>CMe(NH<sub>2</sub>)CO<sub>2</sub>H, 73.6, 288-9° (decomposition) (from aqueous MeOH), (0.16, 0.45, 0.65); MeS(O<sub>2</sub>)CH<sub>2</sub>CHPhCH(NH<sub>2</sub>)CO<sub>2</sub>H (IX), 50.8, 222-3° (decomposition) (from H<sub>2</sub>O), (0.32, 0.61, 0.79); MeS(O<sub>2</sub>)CHPhCH<sub>2</sub>CH(NH<sub>2</sub>)CO<sub>2</sub>H (X), 95.4, 196.5-7.5° (decomposition), (0.37, 0.55, 0.79); Me<sub>2</sub>CHCH[S(O<sub>2</sub>)Me]CH(NH<sub>2</sub>)CO<sub>2</sub>H, 77.7, 166-7° (from aqueous MeOH), (0.14, 0.53, 0.68); MeS(O<sub>2</sub>)CHPhCH(NH<sub>2</sub>)CO<sub>2</sub>H, 51.2, 141-2° (decomposition) (from aqueous MeOH), (0.30, 0.52, 0.70). VIII (6.0 g.) treated dropwise with stirring at 3° with 10.4 cc. concentrated H<sub>2</sub>SO<sub>4</sub>, the mixture heated with stirring to 45°, treated during 1 hr. at 48° with 54 cc. 1.4N HN<sub>3</sub> in CHCl<sub>3</sub>, then heated with stirring 5 hrs. at 48°, treated with 13.5 cc. HN<sub>3</sub> solution, heated 5 hrs. with stirring at 50°, stirred overnight at room temperature, poured with stirring onto 75 g. crushed ice, neutralized with solid Ba(OH)<sub>2</sub> to about pH 2.5 then to pH 5 with solid BaCO<sub>3</sub>, and centrifuged, the supernatant decanted, the residue mixed with H<sub>2</sub>O, centrifuged, and decanted, this operation repeated until free of amino acid, the combined aqueous solns. concentrated in vacuo at 50° to about 100 cc., treated with C, and filtered, and the filtrate concentrated to about 40 cc., filtered, and evaporated to dryness yielded 6.4 g. MeS(:NH)CHMeCH<sub>2</sub>CH(NH<sub>2</sub>)CO<sub>2</sub>H, m. 199-200° (decomposition) (from aqueous MeOH), (0.08, 0.38, 0.71). In the same manner was prepared: MeS(:NH)CH<sub>2</sub>CH<sub>2</sub>CHMe(NH<sub>2</sub>)CO<sub>2</sub>H, 100, 199-200° (decomposition) (from aqueous MeOH), (0.10, 0.35, 0.67). IX (100 mg.) treated with about 60 mg. N-bromosuccinimide gave MeS(O<sub>2</sub>)CH<sub>2</sub>CHPhCHO, isolated as the 2,4-dinitrophenylhydrazone, m. 188-9° (decomposition). X gave similarly MeS(O<sub>2</sub>)CHPhCH<sub>2</sub>CHO, isolated as the 2,4-dinitrophenylhydrazone, decomposed at 196-8° with a change from yellow to red at 169°. Only 4 of the amino acids suppressed the multiplication of T2 bacteriophage of Escherichia coli strain A.T.C.C. number 11303 at pH 7 and 37° at 100 p.p.m. or less.

RX(2) OF 2      F + G ==> H



RX (2) RCT F 123-73-9, G 74-93-1

PRO H 16630-52-7

NTE Classification: S-Alkylation; "1,4-Addition"; #

Conditions: MeSH (piperidine); 5-10 deg 30mn; 3h 20 deg; 1h 90 deg

L10 ANSWER 12 OF 12 CASREACT COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 42:25284 CASREACT Full-text

TITLE: Synthesis of DL-methionine

AUTHOR(S): Pierson, Earl; Giella, Mario; Tishler, Max

CORPORATE SOURCE: Merck & Co., Inc., Rahway, NJ

SOURCE: Journal of the American Chemical Society (1948), 70, 1450-1

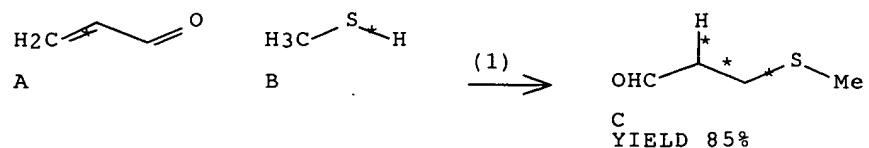
CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

AB Addition of 48 g. MeSH to 56 g. CH<sub>2</sub>:CHCHO and 0.5 g. Cu(OAc)<sub>2</sub> at 35-40° gives 848 MeSCH<sub>2</sub>CH<sub>2</sub>CHO (I), b<sub>11</sub> 52-4°, n<sub>20</sub>D 1.4850, d<sub>20</sub> 1.036 (2,4-dinitrophenylhydrazone, m. 116-19°). I (10.4 g.), shaken with 10.4 g. NaHSO<sub>3</sub> in 35 mL. H<sub>2</sub>O, the product treated (in 3 portions) with 4.9 g. NaCN in 15 mL. H<sub>2</sub>O (temperature below 35°), the oil immediately extracted with C<sub>6</sub>H<sub>6</sub>, and the C<sub>6</sub>H<sub>6</sub> extracted with NaHSO<sub>3</sub>, gives 90% α-hydroxy-β-(methylmercapto)butyronitrile (II), an oil that distilled at 100°/3 μ. I (26 g.), 113 g. (NH<sub>4</sub>)<sub>2</sub>CO<sub>3</sub>, 24.5 g. NaCN, 335 mL. EtOH, and 335 mL. H<sub>2</sub>O, heated 4 h. at 50-5°, and the filtrate concentrated to 300 mL. and heated 5 min. at 90° with 50 mL. concentrated HCl, give 79% 5-(2-methylmercaptoethyl)hydantoin (III), m. 103-5°; it results in 50% yield (based on I) from II and (NH<sub>4</sub>)<sub>2</sub>CO<sub>3</sub> in 50% MeOH (2.5 h. at 50-5°). III (17.4 g.) and 8.8 g. NaOH in 75 mL. H<sub>2</sub>O, refluxed 6 h., an addnl. 4.4 g. NaOH added, and the refluxing continued for 18 h., give 10.6 g. DL-methionine (IV), m. 269° (decomposition); if I and III are not isolated, the yield (based on CH<sub>2</sub>:CHCHO) is 50%. II (123 g.), treated 30 min. at 60° with NH<sub>3</sub>, gives 40% of crude methionine nitrile, which could not be purified; hydrolysis by heating 5.5 h. on the steam bath with 20 mL. concentrated HCl yields 75% IV. Hydrolysis of III to IV was also effected by concentrated HCl at 135° and by (NH<sub>4</sub>)<sub>2</sub>S at 135°.

RX (1) OF 1 A + B ==> C



RX (1)      RCT A 107-02-8, B **74-93-1**  
 RGT D 142-71-2 Cu(OAc)<sub>2</sub>  
 PRO C **3268-49-3**  
 NTE Classification: "1,4-Addition"; S-Alkylation; #  
 Conditions: Cu(OAc)<sub>2</sub> MeSH gas; 30mn 40 deg; 1h